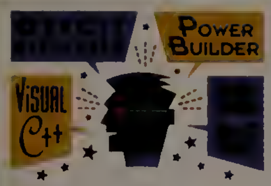

Got experience with Visual Basic, PowerBuilder, C++? Name your price! Careers, page 97

IS leans on workgroup-level tools to build enterprise-class applications, our survey shows. Buyer's Guide, page 89

COMPUTERWORLD

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Java, CORBA to link up

▸ *Sun's cross-platform plan targets Web access*

By Sharon Gaudin

SUN MICROSYSTEMS, INC. is merging two cross-platform standards — its own Internet-optimized JavaBeans architecture and the platform-independent CORBA middleware — in a surprise move that could ease companies' cross-platform migration problems, *Computerworld* has learned.

Colonial Savings' Frank Manci: "Java makes the Internet manageable. . . . CORBA makes the data accessible. What a great combination."

Sources close to the JavaSoft division of Sun said JavaSoft next week will announce plans to link JavaBeans to the Common Object Request Broker Architecture, an industry standard for distributed computing. The company also will extend JavaBeans to the server. JavaSoft will make the announcements at the JavaOne conference in San Francisco.

"Using JavaBeans and CORBA together is going to help [companies] move in-house information onto the Web a hell of a lot faster and easier. It's pretty exciting what we can do now," said David Bowser, a distributed information architect at Columbus, Ind.-based Cummins Engine, Inc.

"People use JavaBeans for the Web, and they use the Web to allow customers to access information right inside their business. CORBA provides access to any kind of server. Putting Beans and CORBA together

Java, CORBA, page 121

Sybase to unify its databases

▸ *Vendor pins recovery hopes on new architecture*

By Craig Stedman

SYBASE, INC. next month will reveal plans to unify its three main databases with common administration, programming and data-movement tools, *Computerworld* has learned.

Sybase users familiar with the Emeryville, Calif.-based vendor's plans said a unified database architecture and tool set would reduce administration, training and data-access headaches — provided Sybase can get its fastball back after suffering big financial losses last year.

The Adaptive Server architecture is the linchpin of the make-or-break recovery strategy Sybase is scheduled to unveil April 7 at its user conference in Orlando, Fla.

Adaptive Server is expected to evolve into a framework of federated databases that can share

Sybase, page 17

Software cops under the gun

Ed Parrish worked at a firm that was raided by the SPA. "We fired some people who should have known better, including the CFO."

DANNY TURNER

By Kim S. Nash

SOFTWARE PIRACY

AS THE FRESHLY fired secretary bumped along through Boston's rush-hour traffic, a lightbulb flicked on. She would turn in her slimeball ex-boss to the Software Publishers Association for stealing software.

A half-dozen men in suits soon knocked on the boss's door. It was a raid. "The software police" wanted to inventory the hard drives of every PC at the 40-employee engineering company and check for proper licenses.

The SPA uncovered dozens of illegal copies of Corel Corp.'s WordPerfect and Autodesk, Inc.'s AutoCAD, according to the whistle-blower, who asked to remain anonymous.

The vendor-sponsored group also walked away with a settlement of about $200,000 from the offending firm.

Surprise attacks and an annual publicity budget of $115,000 have cut piracy rates in the U.S. by half since the late 1980s.

The 12-year-old, Washington-based SPA is zealous in its antipiracy mandate. Indeed, SPA founder and President Ken Wasch "is obsessed with piracy," as one analyst put it. But he should be. He is paid more than $300,000 per year to fight it.

A *Computerworld* investigation of the SPA — including interviews with more than three dozen information systems managers, raided companies and SPA members — revealed an organization grasping for a new identity in the Internet Age and losing money in the meantime.

In the hole for $338,000 in 1995, the SPA is expected to show a $137,000 deficit when

Software cops, page 28

By Laura DiDio

Eric Schmidt was 13 years old when the **technology bug** bit him. He was offered a timeshare on a Unix terminal and never looked back.

New Novell Chairman and CEO Eric Schmidt

"When you're 13, you either go with **sex, drugs, rock 'n' roll** or you find a hobby that you love and stick with it. For me, the passion was programming,"

Novell CEO, page 121

There was a time when you felt invincible.
Nothing could stop you from climbing the biggest tree
or swimming in the deepest pond.

Because you had someone
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Your brother.
Your sister.
Your best friend.

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jump in and solve your biggest technology problem?

We are.

UP FRONT

Your turn

A couple of weeks ago, I presented some comments from Nathan Myhrvold, Microsoft's chief technologist, in which he disparaged network computers and offered a dim view of the Java language. I asked for your comments, and you didn't disappoint. Here are some excerpts:

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

"Nathan suggests that embracing the network computing paradigm involves throwing away all your PCs. However, today's PCs running Web browsers are fine platforms for network computing. In fact, this saves IS the trouble of throwing away PCs and buying new ones every three years."

—**Steve Bennett**
SBENNETT@us.oracle.com

Myhrvold sounds "a little paranoid. The [network computer] is a good supplement to Windows desktops. Taking it as a kind of extreme polar to Windows desktops shows a secret fear."

—**Jia Xin**
Jia.Xin@UC.Edu

"On the growing size of software, [Myhrvold] seems to miss the lesson that the simplest solution usually works best."

—**Tim Wood**
tim_wood@earthlink.net

"Microsoft has made [PC management] difficult by distributing dynamic link libraries [DLL] promiscuously and not making newer versions 100% backward-compatible with older versions. As a result, even if a user installs a new program with a new version of a DLL, some existing programs will break. I am far more optimistic about true network computers [managing this problem]."

—**Jonathan Handler**
71702.1620@compuserve.com

"I am troubled that the selections you chose to print seem deliberately selected to make Nathan appear stupid and out of touch."

—**C. Marcus Durrett**
TheWebBook@aol.com

"Java is only at Version 1. In contrast, compare Windows 1.0 to Win 95. I must say, it has come a long way."

—**Hao-yung Chen**
hchen@silklink.com

"We developers could care less about glitz. The current stable of Java applets are a demonstration of concept. We hope that Java will mature, become a better performer and remain open. If it does, we will be developing serious applications for the enterprise, not eye candy."

—**Phil Duffy**
eleccott@pond.com

"An application that balances my checkbook in DOS can behave the same way in Java. But in Java, I have the option, but not the requirement, to do more things with it — sockets, communications, portability."

—**David Worthley**
worthley@incyte.com

"Nathan's comments reflect Microsoft's disregard for the intelligence that exists beyond the grounds of its campus."

—**Dean Ritz**
deanritz@halcyon.com

Web apps for rent

By Barb Cole-Gomolski

CAN'T FIND or build the Web application of your dreams? Have you considered renting?

Several Internet service providers are gearing up to offer Internet-based applications for rent that will be hosted on their servers and accessed via World Wide Web browsers.

Rented Web applications may appeal to groups that need to collaborate but don't have the technical staff, time or money to support a Web server. These applications could also shorten the time it takes for a company to develop a Web site, because companies wouldn't be required to invest in Web servers. However, users will have to decide how much they will be willing to pay for the services.

Unlike today's software licenses, rented applications might be paid for based on the number of transactions, megabytes transferred or a monthly fee, according to the companies that plan to offer the services. The model may resemble mainframe time-sharing, in which a company pays for an application it doesn't own based on usage.

BUSINESS-TO-BUSINESS

Although few analysts expect these applications to replace specialized back-office systems, renting applications via the Web has appeal for some sites — particularly those that do business-to-business projects.

"I can see it happening because we have trading partners we want to collaborate with, but we don't necessarily want to host those applications on our own network," said Aaron Wiltz, a technical analyst at McDonald's Corp. in Oak Brook, Ill. He said a rented Web application might be just the ticket for a current project that requires the fast-food giant to collaborate with a large oil company on the construction of a restaurant and gas station.

"We have [Lotus Development Corp.] Notes, and they have [Microsoft Corp. Internet] Exchange," which would make it difficult to develop an internal application that would be accessible by both companies, he said. A rented Web application would save time and money simply by requiring both sites to have Internet access and Web browser-enabled desktops.

"If [Internet service providers] presented this as a freebie, it [would] be huge," said David Marshak, a vice president at Patricia Seybold Group, a research firm in Boston. But that isn't likely, he said. Marshak predicted that because those applications are associated with the Web, users probably won't be willing to pay much for them.

Still, Internet providers and some vendors are gearing up to exploit what they see as market potential.

Last fall, Lotus announced Domino Service Provider Applications (SPA), ready-to-use applications for Domino that will handle tasks such as building a home page or managing a project. Netcom On-Line Communication Services, Inc. in San Jose, Calif., is expected to begin to beta-test services based on the Lotus SPAs this spring.

Other Internet providers — including CompuServe Network Services in Columbus, Ohio; IBM Global Services in Tampa, Fla.; and US West, Inc., in Denver — have announced plans to offer Lotus SPA applications.

Interliant, a Houston-based company that already hosts Domino servers on its public network, will offer rentable collaborative applications and vertical applications for the legal, health care, finance and pharmaceutical markets.

NICHE PLAYER

William Wilson, manager of MIS at Johnson & Higgins in New York, said rented Web applications might be useful for groupware applications such as a project management system that might be used on a temporary basis by departments or individuals. "There will be situations where we can use this, but it will be a niche," he said.

Wilson said it wouldn't be practical to deploy rented Web applications on a large scale, because it probably wouldn't save money. "The costs of software is in the implementation, training and support," he said. Because most of those costs would still be incurred with a rented Web application, "I'm not sure how this helps," he said. Internet providers say users will save money on implementation, and some will offer support for these applications as well.

"I'm also not sure we have the internal [TCP/IP] infrastructure to take advantage of this right now," Wilson said.

"I'm skeptical of the idea that these applications are going to magically come down the wire," said Jonathan Lewis, a computer specialist at the U.S. National Park Service in Ventura, Calif. "What if you are a remote user and you have a slow Internet connection?" □

RENTAL APPLICATIONS

Pros

- Reduces application development costs
- Speeds up deployment of Web site and Web applications
- Fosters collaboration with business partners

Cons

- Unclear what costs will be
- Not as customizable as packaged software
- Requires Internet service provider access

THE FIFTH WAVE

BY RICH TENNANT

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and so, with a multifunction system like this, whenever you press the DELETE key, you....
OK- this seems like a good time to move on to the UNDO function.

E-mail Rich Tennant at the5wave@tiac.net

Cisco to close high-end switching gap

▸ *Catalyst 5500 will increase throughput sixfold*

By Bob Wallace

CISCO SYSTEMS, INC. will draw closer to its goal of providing end-to-end networking packages with the debut later this spring of its Catalyst 5500 LAN switch, *Computerworld* has learned.

The high-end data center system, which lets businesses link workgroups to form building-wide switched networks, can handle six times more throughput than Cisco's current LAN switch. It has long been anticipated by users.

Cisco's Achilles' heel has been high-end switching, even though it has spent more than $6 billion on more than a dozen acquisitions in its ongoing quest to offer products in every networking market segment.

The router market leader offers a midrange LAN switch but has had nothing to compete with data center switches from rivals 3Com Corp. in Santa Clara, Calif., and Cabletron Systems, Inc. in Rochester, N.H.

Analysts characterized the development of the Catalyst 5500 as a transitional strategy for the San Jose, Calif.-based vendor.

CANNIBALIZING CUSTOMERS

"Cisco has to protect its installed router base, while making sure that when its users move to switching, they look to Cisco, not its competitors," said Craig Johnson, director of Current Analysis, Inc. in Ashburn, Va. "It's cannibalization. You do it to your customer base or someone else does."

One user said the door to the data center hasn't been slammed shut on Cisco.

"Even though they're getting a late jump, that won't hurt them significantly," predicted Jim Fey, director of strategic projects at PMI Mortgage Insurance Co., a Cisco user in San Francisco. "If you already have Cisco routers, which most people do, why not look at their new high-end [LAN] switch?"

Cisco's current LAN switch, the Catalyst 5000, has long been criticized, primarily by rivals, for its small size — five slots — and limited horsepower — a 1.2G bit/sec. backplane.

Cisco aims to change that with the Catalyst 5500, which will have 13 slots and can be equipped with a 3.6G bit/sec. main backplane as well as a 5.0G bit/sec. Asynchronous Transfer Mode (ATM) backplane. That will yield a combined 8.6G bit/sec. of horsepower, sources close to Cisco said.

But users won't get that added power until the third quarter of this year, when the 3.6G and 5.0G bit/sec. backplanes are scheduled to ship.

"Even though [Cisco is] getting a late jump, that won't hurt them significantly."
– Jim Fey
PMI Mortgage Insurance

On the investment protection front, companies with the older 5000s that migrate to 5500s can use their old switching modules in the new switching system. The new switch also can use ATM cards from Cisco's Lightstream 1010 ATM switch, the sources said.

The 5500 will be able to support 528 shared Ethernet connections, 264 switched Ethernet connections or 264 Fast Ethernet ports. Future 10Base-T switch modules will support 528 switched Ethernet ports.

But it isn't clear whether the Catalyst 5500 will support Internet Protocol switching schemes, which is an issue in one large Cisco shop.

"What remains to be seen is if Cisco will extend its Tag Switching to cover the new switch and what, if any, support the box will have for IP switching approaches from other vendors such as Ipsilon Networks," said Bill Horst, assistant regional manager at the U.S. General Services Administration in Boston.

Cisco will equip the 5500 with a Layer 3 routing module based on its 7500 router, the sources close to Cisco said. They said a base model without interface cards will cost about $22,000.

Cisco officials confirmed plans to announce the system but wouldn't provide details. ☐

Novell, Netscape team up to form 'net start-up

By Laura DiDio

TRYING TO catch up in the Internet race, Novell, Inc. last week said it will work with Netscape Communications Corp. to form an independent company that will integrate Netscape's SuiteSpot family of Internet servers with Novell IntranetWare.

Novell and Netscape will contribute an undisclosed amount of capital to fund the privately held company, which will be called Novonyx.

Analysts hailed the alliance, saying it gives Novell and Netscape the potential to go head-to-head with Microsoft Corp. in the hotly contested Internet race.

If Novonyx can deliver the goods, NetWare/IntranetWare users will have a chance to use Novell Directory Services and the SuiteSpot servers as their Internet gateway, said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass.

Netscape's SuiteSpot is an integrated suite of 10 server software products, including open electronic mail, publishing and groupware on intranets.

"It looks like Novell has finally found a way to aggressively promote the fact that it actually has Internet services. This puts Netscape's SuiteSpot family on 60 million-plus IntranetWare desktops," Doyle said.

But specifics on Novonyx are sketchy. For example, no one has been chosen to head the company, which will be based in Utah near Novell's headquarters in Orem. "We're waiting until Eric [Schmidt, Novell's new CEO] comes on board so that he can have a hand in hiring the top executives," said Willy Donahoo, Novell's director of NetWare marketing.

BRAINSHARE '97

Novonyx won't open for business for about 60 days, pending government antitrust approval. But it does have a World Wide Web page at www.novonyx.com.

Officials stressed that Netscape and Novell already have work under way. Novonyx will ship its two initial products — the Netscape Enterprise Server 3.0 and the Netscape FastTrack Server — bundled in IntranetWare 4.11 in the fall, they said.

To underscore their commitment to a swift delivery, the firms will demonstrate a beta of Netscape's Enterprise Server running on IntranetWare at Novell's Brainshare '97 conference in Salt Lake City this week. ☐

Tool spots net snafus before they happen

By Patrick Dryden

TINY CONSULTANCY NetOps Corp. launched a specialty service last week that promises to predict network failures — the equivalent of hiring Nostradamus to advise your network operations center.

NetOps' crystal ball is a monitor that checks up to 1,000 status indicators per second within critical internetworking devices. The prophets are a handful of engineers at NetOps in New Fairfield, Conn., who interpret the brief spikes and subtle changes that portend doom.

Other monitoring tools and services can help detect emerging network problems, but NetOps is unique in its focus on actually predicting faults.

"They save us manpower and give us a punch list of what to check," said Kevin Jackson, a senior network engineer at News Corp. in New York.

For example, NetOps detected some corrupt packets flowing through one critical T1 line and traced them to a timing error by the carrier, Jackson said.

"Most anybody can recognize a failure, but NetOps sees subtle problems that nobody notices," Jackson said. He couldn't quantify the savings from catching the T1 problem ahead of time, but he said the company "would need at least one full-time engineer to analyze all this information — and a fast monitor."

NetOps gives Continental Cablevision in Boston "analysis that would require significant staff investment," said network engineer Jim Bernhardt.

A typical network operations center sets thresholds to catch immediate failures, but every few seconds NetOps queries devices that supply data and television service. That offers help in two ways, Bernhardt said. Monitoring gives operators "heads-up warning about declining performance," and weekly reports "help us recognize long-range issues to fix before the lights go out," he said.

Charter Systems, Inc. in Waltham, Mass., and International Network Services, Inc. in Sunnyvale, Calif., have similar services, but their resources dwarf NetOps, which launched its service with only four engineers.

Tools that can monitor performance and recognize potential problems are available from such vendors as 3DV Technology, Inc. in Nashua, N.H.; Concord Communications, Inc. in Marlboro, Mass.; and Kaspia Systems, Inc. in Beaverton, Ore.

NetOps charges $50,000 to $250,000 per year for its Network Analysis Service. ☐

Data marts allow quick setup, says ShopKo's Tom Burzinski. Data Warehousing, page 75

Intranets

WEBCASTING

Now Showing On the Company Channel

Pushing data may change how you manage information. Pull-out section follows page 48

Lockheed's Mike Mora says centralized help desks are a tough sell. Corporate Strategies, page 69

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ETC.

Apple revamp plan soothes loyalists

By Lisa Picarille

APPLE COMPUTER, INC.'s most recent moves to shore up the company, including halting development on some software and drastic layoff measures, have elicited a mixed reaction from users at some of the largest Macintosh sites.

But a key piece of Apple's revamped strategy after it restructured two weeks ago — its decision to better service its installed base — may help the company hold on to users who are riding the fence.

And Apple hopes loyal users will in turn spread the good word about the Macintosh.

Interviews with 10 of the 20 biggest Macintosh installations revealed they all want to see Apple and the Macintosh platform succeed. Two-thirds said they are staying with the Macintosh. Of the third that is leaving, most said they based their decision on mounting internal pressures to standardize on Windows.

"We are focusing on people who have a Mac, use a Mac, want a Mac," said Guerrino DeLuca, Apple's executive vice president of worldwide marketing.

USERS GET CHOICE

That tactic is fine with Jet Propulsion Laboratory (JPL) in Pasadena, Calif., which has a mix of more than 4,800 Macintoshes, almost 10,000 PCs and approximately 2,700 workstations. It plans to continue to offer its users a choice of platforms.

Apple's problems had little effect on JPL's decision to continue buying Macintoshes, said Alan Stepakoff, a member of the technical staff at JPL's Institutional Computing and Information Services department. "We will continue to purchase Macs as long as users want them and there is not a significant business reason for users not to get their way," he said.

"I don't see anything that would signify impending doom [for Apple]," Stepakoff said. "The products are viable. Users still love them. I have few support problems. I don't see anything that would seriously impact us or shake our confidence in Apple."

Most Macintosh users joked that the death knell sounds for Apple at least every couple of years.

"Yes, I am troubled by Apple's problems, but I am also confident that the company is solvent and there will be a turnaround," said Lou Hernandez, a Macintosh systems specialist in the academic computing center at Mount Sinai Medical Center's School of Medicine in New York, which has 3,400 Macintoshes and 6,000 PCs. "Apple's technology is a winner; so to me, there is no comparison. Maybe I'm just not an alarmist."

Hernandez added that because his organization includes scientists and researchers who get their own grants and purchase their own systems, they aren't subject to typical corporate pressure to standardize on one platform. Other Macintosh users don't have that luxury.

WORD FROM THE TOP

"How much I like the Mac or my users like the Mac is irrelevant if the people at the top of the company think buying more Macs is a boneheaded move," said an information systems manager at a West Coast company, who asked not to be named.

Mike Anderson, director of computer systems at TRW Systems Integration Group in Sunnyvale, Calif., which has 2,200 Macintoshes and 1,000 PCs, said he faces pressure from other divisions that have standardized on Wintel.

"At this point, we are in a wait-and-see position, but it has become more of an issue," Anderson said. He added that it is likely his location will phase out the Macintosh over the next three to five years. ☐

COMPUTERWORLD

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Apple Computer Restructuring:
The Technology FAQs
product.info.apple.com/pr/press.releases/1997/q2/970314.pr.rel.faq.html

CEO Gilbert F. Amelio's Internet World keynote
product.info.apple.com/pr/speeches/1997/q2/970312.amelio.iworld1.html

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PeopleSoft extends market reach

▸ *Makes push in manufacturing sector*

By Randy Weston

PEOPLESOFT is taking the Netscape Communications Corp. approach to tackling new markets: It's giving its product away.

MANUFACTURING INDUSTRY

Pleasanton, Calif.-based PeopleSoft, Inc. last week announced that beginning next month, users can download from its World Wide Web site a new supply-chain collaboration tool for the manufacturing industry. It is free and designed to work with most vendors' manufacturing and supply-chain products.

NO JOKING AROUND

The freeware is part of a new push by PeopleSoft to be taken seriously as a manufacturing industry player. The company also announced it will beef up its manufacturing module with new demand-planning and transportation modules due out by year's end.

PeopleSoft, founded in 1987 as a human resources application vendor, entered the manufacturing module arena in December — late in the game for an industry already dominated by German software giant SAP AG, Dutch vendor The Baan Co. and Redwood Shores, Calif.-based Oracle Corp.

For example, the tough market recently prompted the former Dun & Bradstreet Software, now owned by Geac Computer Corp., to pull its manufacturing offering only a year after its launch.

"Part of the issue is it takes several years of really pounding out the product before it's accepted," said Chris Jones, an analyst at Gartner Group, Inc. in Stamford, Conn. "[PeopleSoft] has some talented people, but time is time. They are out in a market with a product that has some good capability, but it's not nearly as feature-rich as its competitors' offerings."

PeopleSoft also has been criticized for not pouring as much money and resources in to its product as its competitors.

PeopleSoft officials wouldn't release numbers, but Monte Zweben, general manager of the manufacturing unit, admitted that the amount spent isn't as high as competitors' spending. But that was because "we took the approach you don't need an army of programmers to build applications," he said.

On the plus side, PeopleSoft bought Red Pepper Software Co. last year. Red Pepper was already well-known in the industry and used by PeopleSoft competitors such as Oracle to enhance manufacturing offerings.

Still, users of PeopleSoft's financial and human resources modules said they are feeling the impact of the vendor's growing pains.

"As [PeopleSoft's] installed base and client number increases, certainly they can't give each user as much attention," said Steve Nemish, program manager of integrated financial management systems at aerospace firm McDonnell Douglas Corp. in St. Louis.

McDonnell Douglas is wrapping up an installation of PeopleSoft's human resources and financial modules. Nemish said his office at first was concerned that PeopleSoft would lose focus with its new initiative, but the fear was quickly put to rest. ☐

PEOPLESOFT'S MANUFACTURING MODULE ENHANCEMENTS

Product	Function	Availability
Supply Chain Collaborator	A management tool based on Internet messaging. Allows users to exchange and edit product requests, forecasts and comments with suppliers and customers	April 16 at www.peoplesoft.com (for free)
Demand planning application	Includes standard forecasting algorithms, online analytical processing support and casual models for making predictions from sparse historical data	Q1 1998
Transportation	For planning consolidated loads, carrier mode and travel routes	Q1 1998

Tools boost networks for SNA users

By Bob Wallace

SNA USERS will be able to use routers and lines in their enterprise networks more efficiently, thanks to software due in the coming months from IBM, Bay Networks, Inc. and 3Com Corp., *Computerworld* has learned.

The software will support a new version of Data Link Switching (DLSw), which is an open approach for encapsulating SNA and NetBIOS traffic in Internet Protocol packets for transmission over IP wide-area networks.

CLOSING IN ON STANDARD

DLSw Version 2 is approaching standardization. It supports a technology called multicasting, which lets devices such as routers communicate more efficiently. That sharply reduces WAN overhead and lets users conserve expensive bandwidth.

The new DLSw version also lessens the number of connections that routers need to support, and that simplifies network administration. Users then can implement cheaper routers because they need less processing power and memory.

"[DLSw Version 1] put a great burden on routers at branch offices because every device needed to hold TCP connections to every other router in the network, which creates serious problems in large nets," said Edward Gotthelf, senior network architect at United Parcel Service of America, Inc. in Mahwah, N.J. "We had to continuously add memory to the routers. And network configuration and administration became very difficult in our 2,000-router international network."

"We're very excited to see this version come out because it will simplify configuration management, reduce network costs and improve network reliability all at once," said Gotthelf, a large IBM customer.

In interviews with *Computerworld* last week, product managers from IBM, Bay and 3Com said they plan to offer DLSw Version 2 as a standard feature as soon as the specification is approved. That could happen in a matter of weeks.

IBM initially will offer DLSw Version 2 on the 3746 front-end processor and 2216 LAN-to-host gateway and later on the 2210 WAN switch. Bay and 3Com — both based in Santa Clara, Calif. — will offer it across their entire router lines. Cisco Systems, Inc. in San Jose, Calif., already offers a homegrown DLSw alternative called DLSw+, but analysts said it lacks broad vendor support. ☐

DATA LINK SWITCHING VERSION 2

What it is: Router and WAN switch software that more efficiently handles SNA communications over TCP/IP WANs

Benefit over Version 1: Supports multicasting technology, which reduces WAN overhead in large router networks

User benefits: Offloads work from routers, conserves WAN bandwidth and simplifies network configuration/administration

Supporting Vendors: IBM, Bay Networks and 3Com

Recovery firm hot on heels of missing source code

By Thomas Hoffman

A TINY Framingham, Mass., company has developed what analysts and customers claim is the first system that can recover missing Cobol and Assembler source code.

The low-cost service could be a big help in year 2000 date conversion projects, where finding date fields in source code is a critical task. The problem is that the source code for some legacy programs is nowhere to be found.

But The Source Recovery Co. (SRC) has developed technology — based on pattern-recognition algorithms — that scans machine code programs to reconstruct the underlying source code.

Gartner Group, Inc. in Stamford, Conn., estimates that 3% to 5% of source code is missing from corporate code libraries.

SRC's service is a relative bargain at $5 for each line of code it recovers. Analysts place the cost of rewriting lost source code at up to $20 per line.

SRC has successfully located 2,400 lines of Assembler code for the Social Security Administration (SSA) in Baltimore and code for a Cobol accounting program for Volt Information Sciences, Inc., a contract engineering firm in Westbury, N.Y.

COST-EFFICIENT

Volt needed to locate Cobol source code to modify its accounts payable program, so the company sent the object code to SRC, said Cliff Rizzo, assistant director of MIS at Volt. The cost to recover the source code was about $500. "I could never rewrite the program for that kind of money," Rizzo said.

Chris Murphy, a computer specialist at the SSA, said the agency "might" have two programmers with enough knowledge to reconstruct Assembler code from object code. But that would have taken them away from other application development projects for extended periods of time. ☐

& **Insurer solved the year 2000 problem – in 1990.**
Page 69

“They are treating us like runaway slaves.”

—Former Informix Programmer

EVENTS

January 22: Eleven programmers quit their jobs at Informix and join Oracle Corporation.

January 22: Phil White, CEO of Informix, drives to the home of Larry Ellison, CEO of Oracle, to ask him to return the eleven “runaway” employees.

“I cannot return your employees,” responds Larry Ellison. “They have their own free will. They are different from dishes that you buy at Macy’s.”

January 23: Informix sues each and every one of the “runaway” employees individually.

ADVICE

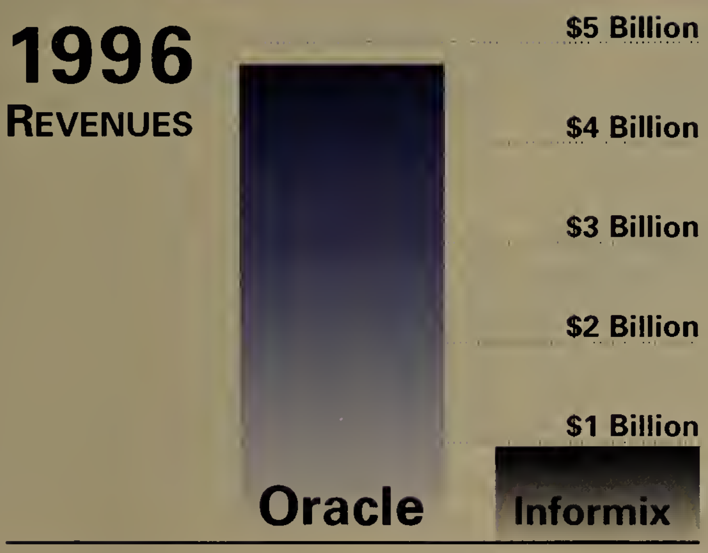
Advice to Informix: Hire programmers not lawyers. If you do, you’ll be able to write a universal database like Oracle did, rather than writing a check to buy one from Illustra.

Advice to Informix programmers: Negotiate your legal fees up front.

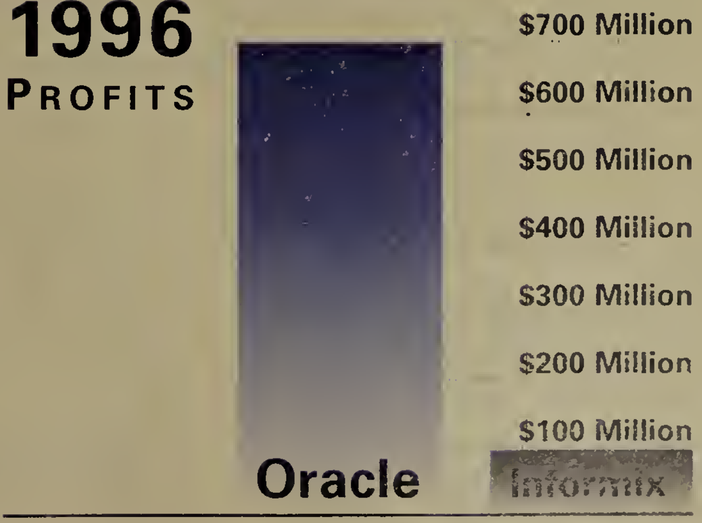
Advice to Informix customers: Call Oracle.

WHO ARE WE TO GIVE ADVICE? (SEE BELOW)

1996
REVENUES



1996
PROFITS



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Users look, but don't leap at groupware on the Web

By Barb Cole-Gomolski

THE MIGRATION of groupware to the Web hasn't been as speedy as some had expected, leaving some pundits to predict that groupware won't hit intranets in a big way until next year.

Moving groupware to intranets is expected to let companies extend the reach of the applications past workers to customers and business partners. The Internet's open protocols also promise the kind of interoperability that will let users book time on one another's schedules even though they are using disparate software packages to track that information.

> **"I see this year as one of building infrastructure, getting the technology stable and allowing the user population to adapt" to intranets.**
>
> **– David Coleman, Collaborative Strategies**

But the organizational issues of groupware are exacerbated by the World Wide Web, which extends the reach of applications to anyone with a browser. Users cite a lack of Java expertise, which is viewed as key to developing more interactive Web applications, as well as the limitations and late delivery of some products designed to host Web-based groupware.

"People are running into challenges deploying [intranet-based] groupware," said Michael McGhee, director of administrative computing at the University of Nevada at Las Vegas.

Groupware applications threaten some workers who are reluctant to share information with others or resent having software that monitors the flow of work across their desktops. Web-based groupware is even more bothersome to those people because Web browsers let an even larger audience participate in the applications, users and analysts said.

"I see this year as one of building infrastructure, getting the technology stable and allowing the user population to adapt to these new functions before moving on to the more sophisticated [things] intranets can do," said David Coleman, principal at Collaborative Strategies, a groupware consultancy in San Francisco.

SLOW ROLLOUT

Hobbled by political tiffs, users are moving slowly. For example, a recent survey of more than 600 information systems professionals by Delphi Consulting Group, Inc. in Boston revealed only fledgling interest in groupware online.

The report found that 15% of respondents use intranets for collaboration, compared with the 30% that publish on intranets. Roughly one in six run Web-based discussions.

"Companies just don't seem to be moving groupware applications to the Web yet," agreed Mike Roszkowski, senior consultant and analyst at Creative Networks, Inc., a market research firm in Palo Alto, Calif. "Most [intranet] applications still fall in the publishing category."

For instance, although Lotus Development Corp. Notes users gained the ability to deploy Web-based groupware last summer with the addition of Domino, interviews with more than a dozen Notes shops showed that most are navigating a cautious course in this area.

WHAT'S DELAYING WEB GROUPWARE

- Organizational issues of groupware
- Companies must firm up Java plans and hire talent
- Products still maturing or not yet available

"We would like to be more ahead of the game by now," said Aaron Wiltz, a technical analyst at McDonald's Corp. in Oak Brook, Ill., a large Notes shop that is in the early stages of developing an intranet application on Domino. At McDonald's, the delay is partly because the company was unclear as to whether it would make Domino or servers from Netscape Communications Corp. the basis of its intranet.

For most companies, the move to deploy groupware on the Web comes in organized stages, with the first being the publishing of static information on the intranet. Next comes exposing existing data stores to users via Web browsers — a move that McDonald's and several other large Notes sites, including SmithKline Beecham Corp. in Philadelphia and Ernst & Young LLP in New York, have begun.

Officials at several companies said the next step involves building more server-based interactive applications, such as those that allow workers to participate in workflow processes, over the Web. To do that, companies have to decide whether Java will be their strategic development platform and then cultivate the talent to build Java applications, Wiltz said.

And although Domino and up-and-coming groupware platforms for the Web such as Webshare from Cambridge, Mass.-based Radnet, Inc. and WebFlow from WebFlow Corp. in Santa Clara, Calif., have recently begun to ship, users said they are still waiting for these and other Web groupware products to mature.

In the case of Domino, users cited Lotus' plans to offer later this year some of the choicest features of Notes clients as Java applets. That will allow users to develop browser-based applications that behave more like Notes applications, they said.

Microsoft Corp., meanwhile, has just rolled out the first version of Exchange Server (see story, page 61) that supports an assortment of Internet Protocols. Rival Netscape Communications Corp. is still beta-testing its Collabra Server for hosting Web-based groupware. ☐

SHORTS

Hackers hit Usenets

Internet Usenet news servers around the world were hit in the past two weeks by widespread attempts to gain manager-level privileges. The hackers used a security hole in older versions of InterNetNews (INN) freeware. As of Friday, the Computer Emergency Response Team (CERT) at Carnegie Mellon University in Pittsburgh had received more than 1,200 reports of attacks, including at least two confirmed cases in which a site's password file was stolen. Upgrading from older INN versions thwarts these attacks, CERT officials said.

3Com, Check Point team up

3Com Corp. and Check Point Software Technologies Ltd. said they are collaborating on software to provide multiple network security levels. 3Com, in Santa Clara, Calif., plans to bundle evaluation copies of Redwood City, Calif.-based Check Point's Open Platform for Secure Enterprise Connectivity into the next release of its NETBuilder IP software due out around midyear.

E-banking specs due

Integrion Financial Network, an Atlanta-based electronic banking venture supported by IBM and 15 large U.S. banks, plans to release tomorrow its standards for electronic commerce and secure banking. The network was established to create open, cross-platform messaging specifications for consumer and small-business banking transactions. The Gold Standard for Electronic Financial Services will be available on Integrion's World Wide Web site (www.integrion.net).

HP bundles Oracle Web server

Hewlett-Packard Co. plans to bundle the basic version of Oracle Corp.'s World Wide Web application server with all its HP 9000 Unix systems, the companies said last week. Redwood Shores, Calif.-based Oracle is making the HP-UX operating system a primary development platform for its Web Application Server and the upcoming Oracle8 database. HP, in Palo Alto, Calif., plans to make Web Application Server 3.0 available for downloading from its Web site (www.hp.com) in May.

Cisco plays high-speed card

Cisco Systems, Inc. will enter the Digital Subscriber Line (DSL) market with a card that goes into carrier switching offices and boosts high-speed data transfers over existing twisted-pair wire. Cisco's card will use technology that combines Integrated Services Digital Network and DSL in a service called IDSL that supports 128K bit/sec. data transfers, according to sources briefed by the San Jose, Calif., vendor.

MCI wired on rural America

MCI Communications Corp. last week announced plans to join with an electric power company and a local telephone company to wire rural America with voice, video and high-speed Internet access. The service is aimed at telecommuters and could open up the untapped rural market for electronic commerce. Initially, Washington-based MCI, Northwest Iowa Telephone and Northwest Iowa Power Coorperative are forming a joint venture called Pioneer Holdings in Sioux City.

SHORT TAKES IBM and SAP AG said they will support SAP's R/3 applications software on the Windows NT version of IBM's DB2 database by year's end.... Digital Equipment Corp. last week announced a new line of low-end notebooks, the HiNote VP 500, which are available with CD-ROMs. They run at 133 or 166 MHz and cost between $2,499 and $4,499. ... Adapter card maker Olicom, Inc. in Copenhagen, Denmark, said it will buy SNA internetworking products vendor CrossComm Corp. in Marlboro, Mass., for about $90 million in an effort to diversify beyond the desktop.

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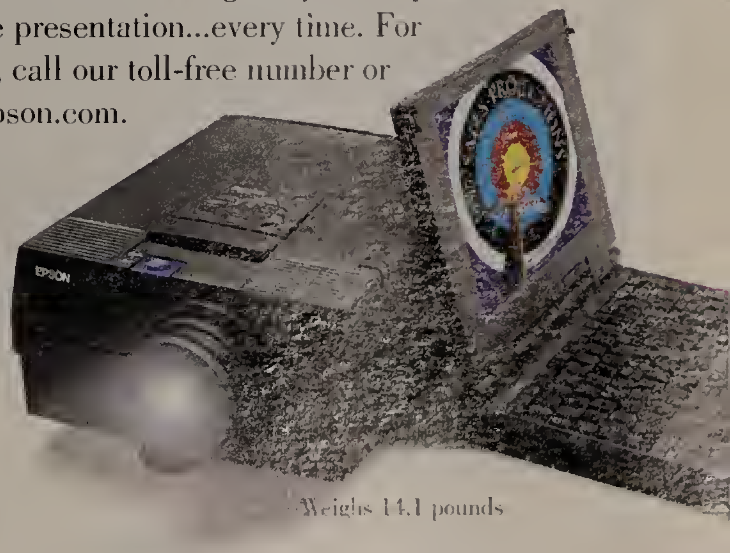

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Monitors provide views of NT servers

▸ *Start-ups ship similar tools to watch over the enterprise*

By Patrick Dryden

TWO WINDOWS NT monitoring tools will debut this week that can help information systems managers deploy Microsoft Corp. file/print services and BackOffice applications throughout large networks.

NetIQ Corp. in Santa Clara, Calif., and NuView, Inc. in Houston are launching software — built entirely of Microsoft technologies — that automates maintenance of multiple Windows NT servers.

For the first time, beta testers said, central operators can watch the availability and performance of Windows NT servers enterprisewide instead of individually. And they can do it without having to invest in proprietary products or cumbersome suites.

"Now a manager can check all our servers automatically instead of manually logging in to every system each morning to see if the services are still running," said Edward Bianco, chief information officer at Lowell General Hospital in Lowell, Mass.

Before installing NuView's ManageX, hospital IS managers required three separate tools to monitor system, application and network conditions for each server, Bianco said.

Now they can point and click to build a monitor that reveals free disk space on the 12 servers, for example, and sends an alert at critical thresholds.

Central operators can watch the performance of Windows NT servers enterprisewide instead of individually.

Nordstrom, Inc. tested NetIQ's AppManager Suite to fill the need for "proactive monitoring" of 200 servers located at stores and offices that lack technical staff, said Larry Shaw, systems coordinator at the Seattle-based retailer.

Microsoft's performance monitor is "very clumsy to run across a lot of servers," he said.

But AppManager Suite lets him apply a monitoring function to all servers easily, Shaw said.

Now he can generate an immediate status report and archive trend information for multiple systems to understand performance problems and plan capacity needs, he said.

NT-CENTRIC TOOLS

Other options for handling those management chores are included in more comprehensive products from vendors such as BMC Software, Inc. in Houston; Computer Associates International, Inc. in Islandia, N.Y.; and Tivoli Systems, Inc. in Austin, Texas.

Such integrated suites will reduce management cost and complexity in the long run, analysts predicted. But for now, frustrated IS managers welcome the new point products focused on Windows NT.

"We want to stay away from proprietary tools, anything on Unix and big complex suites," Bianco said. "Our goal is to migrate as much as possible to NT."

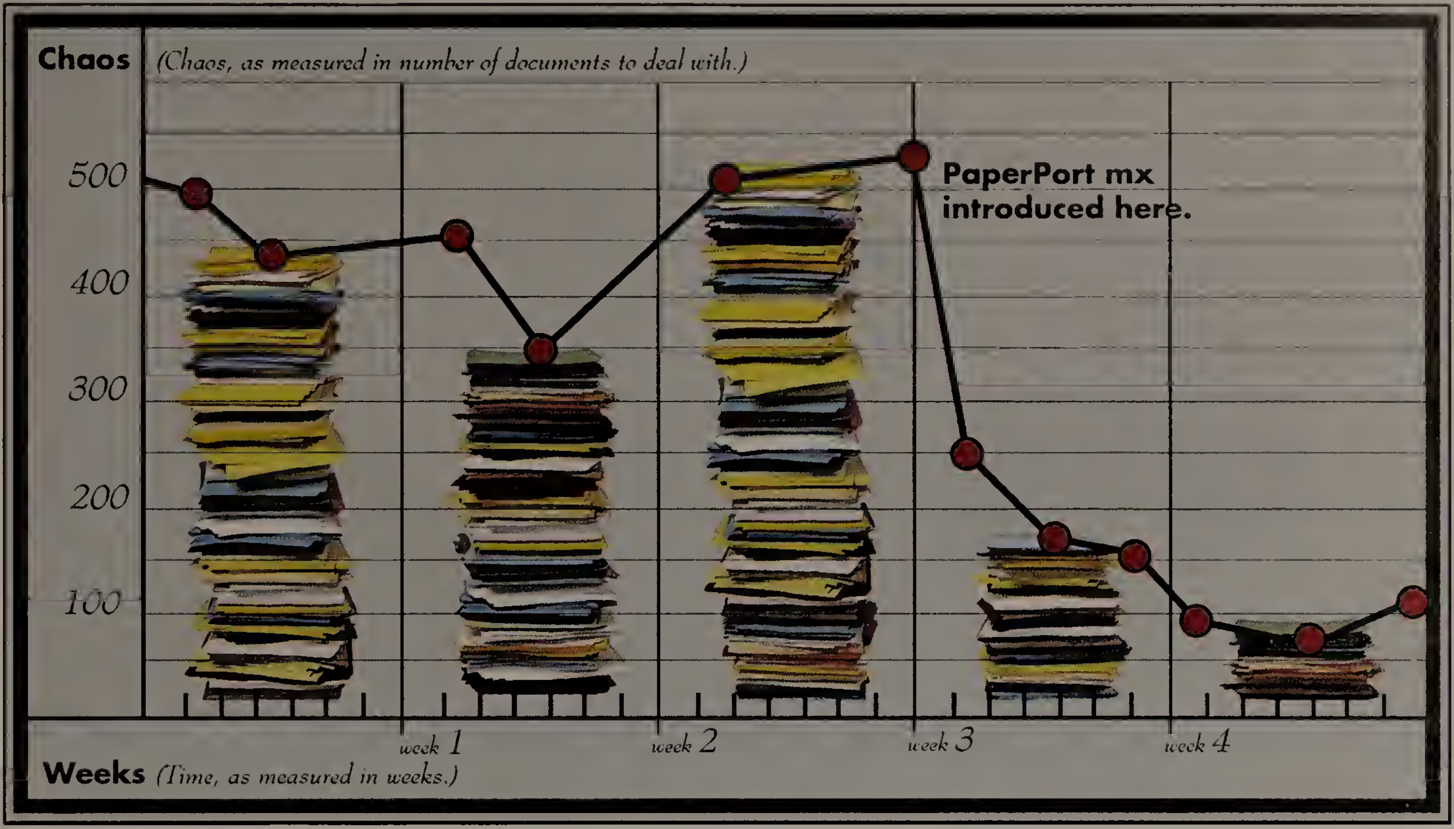
A Texas-based manufacturer, which requested anonymity, is deploying NuView's ManageX to monitor 400 servers. "I feel comfortable with their use of Microsoft object-oriented technology instead of the proprietary methods ported from Unix to NT" by established systems management vendors, said a beta tester there.

But NetIQ and NuView are start-ups, so they must establish credibility beyond their Windows NT cachet by supplying adequate support and proving the solidity of their 1.0 releases.

Pricing for NetIQ's AppManager Suite starts at $600 per managed system and $2,500 per monitoring console.

Pricing for NuView's ManageX starts at $1,495 per managed system, including console components. ☐

THE BUSINESS STRESS-REDUCTION INDEX



Sharp drop in chaos; Analysts suspect new PaperPort mx.

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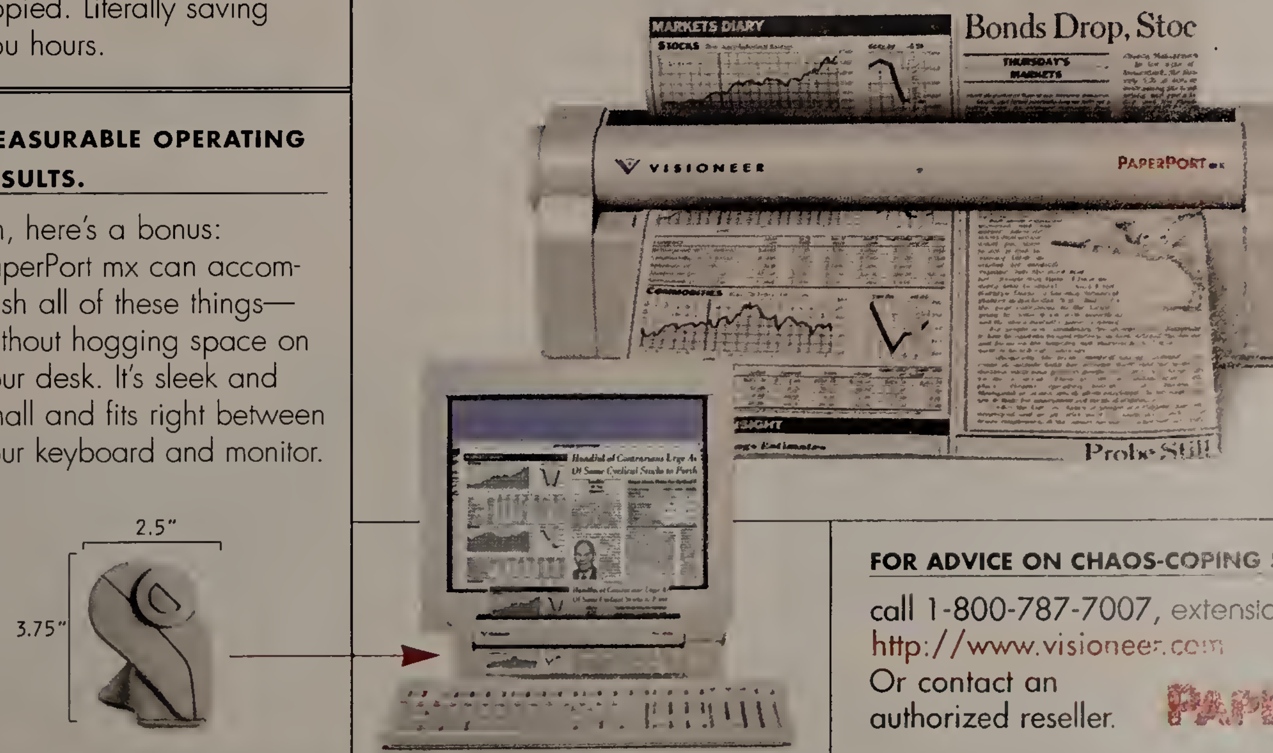

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More and more laptops labeled damaged goods

By Mindy Blodgett and Stewart Deck

DAN COOLIDGE, an attorney at Sheehan, Phinney, Bass & Green in Manchester, N.H., was in the middle of an important negotiation. While he sat in a Utah hotel, working on a long contract and typing away on his IBM PC Co. ThinkPad, disaster struck.

"The hard drive made a sound no computer should make," said Coolidge, co-author of *A Survival Guide for Road Warriors*. Working feverishly, he was able to extract most of the word processing file from the broken hard drive and save his work.

"I've had screens break and PC cards break," Coolidge said. "Now I treat my laptop like a hungry tiger that may attack at any time. I only use it on the road — never at home or in my office, where I use a desktop PC. In the office, it sits in a little cotton-lined cell, because it is so essential when I am traveling."

Coolidge's dilemma isn't an isolated experience. Users and industry observers said flimsy laptops are on a collision course with a notebook industry geared toward making portables lighter, cheaper and faster — not stronger.

JIM LEYNSE/SABA

AT&T's Asmar Madyun: "Vendors need to focus more on making [laptops] tougher"

The laptop universe is divided between "ruggedized" laptops — usually used by field-service workers — and the more fragile notebooks used by mobile professionals.

Ruggedized laptops, which weigh several pounds more than standard laptops, can cost $5,000 or more. They usually feature extra protection such as zinc-coated steel screws, shock-dissipating internal mountings, magnesium-alloy frames and drop-resistant disk drives.

Vendors argue that users have accepted the trade-off of lower cost and lighter weight vs. fragility.

They said more workers are going mobile — replacing their desktops with laptops. For instance, Gartner Group, Inc. in Stamford, Conn., predicts that the number of mobile workers will increase from 19% last year to 43% in 2001.

As laptop use increases, reports of notebook damage increase, too. Safeware Insurance, Inc. in Columbus, Ohio, a computer insurance company, said accidental damage to laptops last year increased 53% over the previous year to $291 million.

"Users want lighter, faster, but they also want them to be tougher," said John Dunkle, an analyst at Workgroup Strategic Services, Inc. in Portsmouth, N.H. "This is hard to do without really increasing prices."

Maybe so, but replacing broken components can be an expensive and logistical headache for information systems departments, especially when a user is on the road when the damage occurs. PC cards and modems, items that often break off, can cost between $200 and $400 to replace. And David Johnston, Safeware's CEO, said one of the most common damaged items is screens, which can cost between $3,000 and $4,000 to replace. Disabled power supplies can cost $50 or more.

"We think vendors need to do more to protect laptops," Johnston said.

Asmar Madyun, technical support manager at the network services division of AT&T Corp. in Berkeley, N.J., agreed that vendors need to do more to ruggedize laptops.

"Doors break, hinges break, the corners of the chassis crack," Madyun said. "I think vendors need to focus more on making these things tougher. Sometimes I wish they would at least put little rubber bumpers in the corners of the chassis."

Some vendors are trying to respond to user complaints.

Wes Laird, director of portable computing marketing at Dell Computer Corp. in Round Rock, Texas, said complaints from users about damaged laptops "have grown more vociferous and loud.... They are running mission-critical applications on these devices, and the [breakage rate] isn't acceptable."

To address the problem, Dell is testing incorporating magnesium-alloy into standard casings and is working on strengthening screens, Laird said. And Digital Equipment Corp. officials said the company is also working on strengthening its notebooks. □

Stronger laptops still weak in market

Even as users urge vendors to strengthen flimsy laptops, sales of ruggedized laptops — which are built to withstand extreme temperatures and pressure — are unlikely to rise.

That is because mobile professionals won't tolerate the trade-off, analysts said. Users would have to give up the light weight and relatively low cost of standard notebooks for the heft and hardiness of their more expensive and ruggedized brethren.

Randal Giusto, an analyst at International Data Corp. in Framingham, Mass., said ruggedized portable computers currently make up 2.3% of the overall U.S. laptop market and will rise to only 2.5% by 2000.

Instead, some frustrated users are pushing a compromise: They are bulking up their standard laptops.

Rod Mano, a senior product manager at systems integrator Entex Information Services, Inc. in Rye, N.Y., said his company took standard portables and added rugged elements for users. Adding rugged elements, such as stronger casing, can cost $500 or more.

"We put together some rugged systems for an oil company [that] needed something that was more durable than the normal, regular line," Mano said.

Entex is working with the original laptop manufacturer, a case manufacturer and a mounting apparatus vendor to create strong, mounted laptops for Detroit police department cruisers, Mano said. — Mindy Blodgett and Stewart Deck

IS grapples with where to store data

By Matt Hamblen
SAN JOSE, CALIF.

STORAGE CAPACITY is growing in the mainframe world and at the desktop/laptop level with products that add more gigabytes at lower cost. But information systems managers can be frustrated when users want more capacity at both ends of the spectrum, analysts said at InfoStor '97 here last week.

"There is a conflict about where to store data, but if IS managers try to stop desktop and removable storage, they'll have a fight on their hands," said Dennis Wade, president of Peripheral Research Corp. in Santa Barbara, Calif.

The question of where to store data follows the battle lines between the server-centric network computer and the desktop-centric PC. "There's a sense now that you need to store data in one [central] place with the [network computer]" and not at the desktop, said Eric Haseltine, vice president and chief scientist for creative technology at Walt Disney Imagineering in Glendale, Calif.

Users feel more overloaded with information, and the growing storage capacity of smaller devices will only contribute to that, Haseltine said.

"You have exponential growth in information, and you storage guys are the culprit," Haseltine said in a keynote speech at the conference. "People are beginning to be overwhelmed with this information."

> **"If IS managers try to stop desktop and removable storage, they'll have a fight on their hands."**
> **– Dennis Wade, Peripheral Research**

IS departments need to consider the "browsability" of all the terabytes they store for ordinary people who have limited cognitive ability to comprehend information, he said.

Haseltine said IS and research and development teams should hire artists to help put emotion-laden and nontechnical graphics into interfaces, computer commands and computer communications.

Technologies previewed at the show promise to put more gigabytes per square inch on a single disk or other type of media. A representative from TeraStor Corp. in San Jose, described Near Field Recording technology, which could increase the capacity of a disk by 10 times.

Near Field Recording, which puts magnetic and optical drive technology in one product, is slated for release in a year, TeraStor officials said. The inaugural InfoStor '97 attracted 75 vendors and more than 500 attendees. Organizers said the storage industry tends to get overlooked at the big trade shows such as Comdex. □

AT&T increases ATM prices

AT&T CORP. is hiking the price of Asynchronous Transfer Mode service by 15%, with 5% increases for its mainstream frame-relay and private-line services.

The price increases are likely driven by increased corporate demand for high-speed services, said Christine Heckart, an analyst at TeleChoice, Inc., a consultancy in Verona, N.J.

"It's 'Tickle Me Elmo' syndrome," she said. "You've got phemomenal demand driven by businesses and Internet service providers [that] need more capacity for data applications. At the same time, you have an industrywide capacity constraint. Carriers can't overbuild fast enough."

But Steve Sazegari, principal at Tele.Mac, a Foster City, Calif.-based consultancy, said AT&T hiked prices because its revenue is lagging behind Sprint Corp. and MCI Communications Corp. Sazegari said price increases won't have much of an impact on the company's bigger corporate customers who get bundled voice and data deals from AT&T. Their bill increase will likely be 2% to 3% rather than 15%, he said. — *Kim Girard*

Business, not consumers, will shape online commerce

Business-to-business is where money is

By Johanna Ambrosio
NEW YORK

ELECTRONIC COMMERCE is bound to happen — but it is going to take longer and require more technology infrastructure and organizational reshuffling than some have predicted.

And it won't begin with the mass consumer market that was once envisioned, but with businesses selling or sharing information with other businesses — a manufacturer of earth-digging tools, for example, linking to some of its largest suppliers and select customers.

That was the consensus at the Gartner Group Internet & Electronic Commerce Conference & Exposition held here last week.

SHOW ME THE MONEY

"Business-to-business is where really the money is going to lie for electronic commerce in the near term, because businesses are prepared to do business electronically more so than consumers are," said Barbara Reilly, a Gartner Group, Inc. analyst.

Electronic marketplaces are already emerging, she and other presenters said. Those are World Wide Web sites for specific areas of interest, where buyers and sellers of similar goods can go for information or actually buy and sell items.

Even as that is happening, however, some have had to scale back their grand plans. Giant retailer Kmart Corp., for example, "had to back out" of its plans for a massive inventory management system in which its suppliers would participate, according to Dave Taylor, a Gartner analyst. The suppliers didn't have the applications, telecommunications capabilities or even staff required to pull off the plan. "Coercion has its limits," he said.

> **"The [electronic commerce] payoff is long-term, not short-term."**
> **– Dave Taylor, Gartner analyst**

A Kmart spokeswoman denied that the company has had problems with its inventory management systems. "We haven't scaled anything back," she said.

In any case, a raft of technological and organizational issues are making it clear that true electronic commerce — the near-instant buying and selling of goods via the Internet — is at least five years away for most companies. Problems include the following:

- Electronic commerce requires a company's highest-level executives to decide about the possible consequences of selling directly via the Internet. Selling through the Web can result in commodity pricing, especially given how easy it can be to compare different vendors' prices, Gartner analysts said.
- Organizational issues play a huge role. For electronic commerce to succeed, there must be a separate business unit responsible for redefining procedures throughout the organization.
- It may be necessary to outsource all or part of the electronic commerce operation.
- Year 2000 problems may interfere. The longer firms wait to resolve the year 2000 date issue, the more money and time they will spend on it. Fewer resources will also be available to tackle electronic commerce.
- Another high-level decision must be made about whether a company wants to cut out its distributors by selling direct or augment distributors by selling just some high-priced or low-priced items online, for example.

The bottom line for doing electronic commerce: "The payoff is long-term, not short-term," Taylor said. □

Service key to online business success

By Mitch Wagner
NEW YORK

ELECTRONIC COMMERCE is changing the rules of competition.

No longer will companies be able to compete simply by offering the lowest prices. Instead, they will beat rivals by supplying information and services, analysts at a Gartner Group, Inc. conference said last week.

That doesn't mean pricing will be irrelevant. Customers will still seek out the lowest prices, and companies will be able to make money by finding inexpensive sources.

But the increased global information available through the Internet will jet-propel customers to shop around and buy from a wide range of suppliers.

VALUE-ADD

As electronic commerce activity picks up in the next 18 to 24 months, firms will find themselves providing more added services to build long-term loyalty, said analysts at Gartner's Internet & Electronic Commerce Conference & Exposition here.

Companies will survive by offering their customers additional information over the Internet about their products; for instance, how to use those products and any safety concerns. When a customer orders a product, firms will need to provide data about price, availability and delivery time, Gartner analysts said.

Andrew Thomas, director of operations planning at Heineken USA, Inc., agreed with Gartner's assessment. Heineken, in White Plains, N.Y., has an extranet service called the Heineken Operational Planning System, or HOPS, which lets its 450 U.S. distributors order beer online. The system includes interactive applications designed to help distributors predict their requirements [CW, March 3].

"Our ongoing belief is that the companies that survive in the long run are those that are easiest to do business with and those that offer the most integrated package of services," Thomas said.

Those systems often are driven by business units rather than information systems departments. But one role the IS department can play is with education, said Hossam Megahed, manager of the business information center at the American Chamber of Commerce in Cairo.

"There's still a gap between IS and the business side," Megahed said. "We need to make them aware of the realities, what the technology can do." □

IS looks to bundled intranet service

By Justin Hibbard
NEW ORLEANS

INFORMATION SYSTEMS departments that want to control intranet costs are serving menus of ready-made intranets to their business units.

That was the report from Stamford, Conn.-based Meta Group, Inc. at its Workgroup Computing Strategies Conference/1997 here last week.

Although there have been signs that some users are toying with chargeback systems — for example, Wells Fargo & Co. in San Francisco and British Columbia Hydro and Power Authority in Vancouver [CW, Jan. 27] — Meta analysts are telling clients to follow the example of IS departments that avoid chargeback systems and instead offer business units a choice of packaged intranet services.

In a chargeback system, an IS department uses special software to measure each business unit's use of computing power, hard disk space and telecommunications. Then IS bills each unit for its usage.

COSTS OUTWEIGH SAVINGS

But no one is sure how to do end-user chargebacks fairly. Users at the conference agreed with Meta Group President Dale Kutnick that chargeback is often inefficient because the administrative costs of tracking every instance of usage outweigh the savings gained from charging usage back to business units.

A better alternative, Kutnick said, is to bundle basic intranet services — such as electronic mail, World Wide Web server hosting and application development — and sell the bundle at a fixed price.

But some users noted that unlike chargeback systems, packaged services don't always account for business units that use more than their fair share of IS resources.

INTRANET COSTS

Bundled service assumes that all business units will use the same amount of resources, according to Blair Dill, manager of training and consulting at Sabre Computer Services, the IS division of American Airlines in Fort Worth, Texas.

"With packaged service, [the IS department] assumes the risk," Dill said. For example, when IS sells use of the corporate network at a fixed price, it risks selling the service to a business unit that might use excessive bandwidth, Dill explained. In a chargeback system, by contrast, the business unit pays for each packet it sends over the network.

"It's a question of how much you can commodotize the package," said James Nelson, a technology planner at BC Gas Utility Ltd. in Vancouver.

Other conference attendees offered alternative approaches to controlling intranet costs.

The intranet and groupware product manager at a large soft drink company in the Southeast said his IS unit maintains centralized control of the firm's web servers. The firm thus avoids the high cost of supporting users who run their own servers, he said.

"The last thing you want to have happen is every guy in the technical division running a web server on their PC," the product manager said.

But Lockheed Martin Corp.'s Idaho National Engineering Laboratory in Idaho Falls has a different approach. The IS unit there sets up web servers for other departments, but the departments must manage their own servers, said Gail McGuire, IS department manager.

So far, the system has allowed IS to support the company's intranet on an annual budget of $250,000, McGuire said. But she added that intranet costs are not a big concern for her company because the intranet has offset costs in other areas, such as paper-based publishing and help desk support. □

HP/Microsoft plan targets PC ownership costs, NT in enterprise

By Jaikumar Vijayan and Laura DiDio

LAST WEEK's much-hyped alliance between Hewlett-Packard Co. and Microsoft Corp. turned out to be a rehash of statements both companies have been making for several months.

But it did give users a more clear picture of HP's plans to lower the cost of PC ownership and integrate Windows NT into the enterprise.

The deal means Microsoft, which has been trying to legitimize NT in the enterprise, now has access to HP's huge base of enterprise accounts. For HP, the move demonstrates its endorsement of and commitment to supporting users with a mixed Windows NT/Unix environment, analysts said.

Users said they would evaluate the companies' results when products arrive.

"Companies are big on mouthing platitudes and saying they're going to cooperate. But I don't get excited about anything until I see it, test it and know it works," explained Kurt Guerrero, a senior network manager at Northern Trust Co. in Chicago. The company has 7,000 users and 40 Windows NT servers.

WINDOWS NT/UNIX COLLABORATION

"We are very interested in anything that saves money for us," especially in mixed Unix/Windows NT environments, said Paul Hoedeman, chief information officer at AlliedSignal Aerospace in Torrance, Calif.

CUT OWNERSHIP COSTS

Hoedeman was referring to the HP/Microsoft plan to reduce PC ownership costs.

AlliedSignal has 80,000 users at 100 locations nationwide and has a big stake in both Unix and Windows NT.

HP and Microsoft will release several products, including the following:

- A sub-$1,000 HP version of a Microsoft NetPC, which is scheduled to ship in the summer.
- Incorporation of Microsoft's Zero Administration Windows into HP Vectra PCs and NetPCs, to cut PC management costs.
- Integration and interoperability of HP's OpenView management software with Windows NT management products.

The companies also announced tools for remote management of mixed Windows NT/Unix sites and plans to make Microsoft Exchange Server the strategic messaging platform for the mixed environment (see chart).

"All this is wonderful in theory and on paper," said Peter ffoulkes, an analyst at Dataquest in San Jose, Calif.

"However, Microsoft and HP must demonstrate to their respective customer bases that they can indeed deliver on these big promises of interoperability and, at the same time, lower the cost of ownership," he said.

Microsoft has similar ventures with other companies, including Digital Equipment Corp. and NCR Corp. ☐

HP/MICROSOFT PLAN TO CUT THE COST OF PC OWNERSHIP

- HP will announce a NetPC for less than $1,000
- Integrate HP TopTools in all HP Vectras and NetPCs for remote management
- Integrate Microsoft's Zero Administration Windows software on HP PCs
- Combine total cost of ownership assessment services for large enterprise customers
- Set up new management services for systems integration, asset tracking, training and education

& Reaching for enterprise, Microsoft moves Windows-based DCOM to Unix. Page 47

IBM server promises better NT integration

▸ *Transaction Server includes development tool*

By Tim Ouellette

IBM NEXT WEEK will ship its Transaction Server for Windows NT, giving users a way to create mainframe-class middleware applications in Windows NT workgroups.

The server also will offer an add-on called Interspace, a development tool set from Planetworks in New York that simplifies middleware applications development. Transaction Server, which costs $699, is part of IBM's Software Server suite. The suite includes groupware, communications, directory and World Wide Web servers. Transaction Server already runs on IBM's OS/2 and AIX operating systems.

Observers said Interspace will help Windows NT installations access legacy data via IBM's middleware faster than before.

Interspace makes middleware functions from products such as IBM's CICS, Encina or MQSeries look like just another object in Powersoft's PowerBuilder, Microsoft Corp.'s Visual Basic and Java programming environments.

"Middleware needs tools to automate the development process," said Anne Thomas, a middleware market analyst at Patricia Seybold Group in Boston. Middleware promises to simplify access to legacy data and help developers connect disparate computer systems, but developing for the middleware environment isn't easy.

With Interspace, developers don't have to learn these middleware-specific calls, because they look like native PowerBuilder, Visual Basic or Java objects.

Thomas said CICS, Encina and IBM's other mainframe products need this kind of tool to compete with Windows NT middleware technologies such as Viper and Falcon. ☐

Concentric's Internet dial-in service will cost $39.95 per month and will provide:

- Unlimited Internet connectivity
- Customized dialing software that hunts through multiple phone numbers for a working connection
- Technical support via an 800 number
- Availability in many areas in May

• $39.95 Premiere service

Concentric ups 'net ante

By Mitch Wagner

CONCENTRIC NETWORK Corp. is readying May delivery of an Internet service that is twice the going all-you-can-eat rate but claims to offer greater reliability.

The Premiere service from Concentric, in Cupertino, Calif., will cost $39.95 per month, compared with the industry standard $19.95 per month.

Concentric will continue to offer its own $19.95 connectivity plan. But the Premiere service will offer users special client software that adds to Windows 95's Dial-Up Networking utility.

If the user gets a busy signal or fails to connect, the Premiere software will automatically dial another number and will continue "hunting" through Concentric point-of-presence telephone numbers until it finds a working connection.

Premiere customers also will receive telephone service from a toll-free number, prioritized ahead of other Concentric customers. The Concentric plan fits in with recent analyst predictions that cheap, flat-rate Internet connectivity will fade as users begin to demand better service and become willing to pay more for it.

But user Lela Armstrong, a senior systems coordinator at Indiana Power & Light Co. in Indianapolis, said she is skeptical. "I know how to dial another phone number if one is busy," she said. "I haven't been experiencing problems to the point where I'd be willing to pay double for it."

SHAREWARE OPTION

For a $30 onetime fee, users can download a shareware package, RAS+95 from Lamb Software, Inc. (www.lambsoftware.com), that will hunt through multiple dial-up lines for a working connection, as the Premiere software does.

Users need to configure the RAS+95 software themselves. The Premiere software comes preconfigured.

Netcom On-Line Communication Services, Inc. in San Jose, Calif., said it will announce details this week of its plans to replace its $19.95 monthly service.

Netcom was one of the first national Internet service providers to offer a flat-rate monthly service. ☐

Microsoft unites development tools

By Sharon Gaudin

MICROSOFT CORP. last week released its much-hyped Visual Studio '97 integrated development environment.

Microsoft CEO Bill Gates made the official announcement in a broadcast statement at the company's Developer Days seminars held across the country.

Visual Studio repackages Microsoft's popular development tools — Visual C++, Visual Basic, Visual J++, Visual InterDev and Visual FoxPro — and adds common libraries and third-party tools. Each tool also is sold individually.

But there are three interfaces for the tools in Visual Studio. Sources close to Microsoft said the company is working to integrate them with a common interface. Some sources said that interface will be modeled after Visual Basic 5.0. Visual Studio Professional Edition costs $999. The Enterprise Edition, which includes the Visual Modeler, a repository and a database tool set, costs $1,499.

Version 5.0 of Visual Basic Professional Edition and Visual C++ Version 5.0 Professional Edition each cost $499. ☐

Sybase to unify databases

CONTINUED FROM PAGE 1

data easily and efficiently, even though each database would continue to be optimized for different processing uses.

The ability "to request information from this big cloud of disparate data sources is very exciting," said Howard Michalski, director of information systems at GE Capital Services' automobile warranty division in Lakewood, Colo. "Users could query your enterprise, rather than a specific database."

Michalski's unit runs warranty applications on SQL Server, Sybase's lead database. It also has a 120G-byte data warehouse on the Sybase IQ decision-support engine.

THREE AMIGOS

Sybase's database family includes the following products:

Database	Key features
SQL Server	Optimized for high-volume transactions
SQL Anywhere	Memory footprint of less than 1M byte
Sybase IQ	Indexes data for fast query response

Sybase's lack of integrated administration forces GE Capital to train IS workers on multiple installation, backup and reconfiguration tools, he said.

But Michalski said he isn't convinced that Sybase is paying enough attention to its core database technology. "Sybase is all over the place right now," he said. "It seems like they're just chasing the market around."

COMPETITIVE MOVE

Sybase will introduce new versions of SQL Server and Sybase IQ in April [CW, March 10]. But the Adaptive Server plans are its attempt to get on the same "universal server" wavelength as rivals Oracle Corp., Informix Software, Inc. and IBM.

Last year, Adaptive Server was described as an extension to SQL Server for complex data types such as text and images. But Sybase officials last week said Adaptive Server has been expanded to provide common tools and a consistent look and feel across SQL Server, Sybase IQ and the SQL Anywhere mobile database.

"If somebody buys a complete environment from us, they don't want to see any seams," said Robert Epstein, executive vice president at Sybase. "But the products are more separate than what we'd like them to be now."

Sybase will begin rolling out the Adaptive Server technology in the second quarter, the company said. Sybase will include support for managing Sybase IQ from SQL Central, its main administration tool. Sybase IQ will be added as a target database for Sybase's data replication software by midyear.

Sybase also is developing common application programming interfaces and uniform support for its TransactSQL language. Support for complex data types also is planned across the three databases, said Mikael Wipperfeld, director of server marketing at Sybase.

The business operations group at MCI Communications Corp.'s MCI Mass Markets division in Denver uses SQL Server and Sybase IQ in tandem for data warehousing. Getting them to work together requires extensive code changes and work-arounds that should disappear once Adaptive Server rolls out, said Steven Garno, a systems engineer who leads database development at the unit.

But Sybase still faces an uphill climb in the database market, Garno said.

Past performance problems with SQL Server and the firm's recent financial woes are "like a stick in their side," Garno said. "Once something happens to put you on shaky ground with people, it's very hard to get their trust back." □

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• Avoiding 'bad laws'

Feds lean toward minimal electronic-commerce regulations

By Mitch Wagner
BURLINGAME, CALIF.

TOP-LEVEL FEDERAL officials are urging a go-slow policy on federal regulation of Internet commerce, saying the marketplace should be allowed to sort things out before the government steps in with regulations.

"We have a lot of smart lawyers in the government, and if we locked them in a room and asked them to think of every way a person could get screwed on the Internet, they could promulgate thousands of regulations," said White House aide Ira Magaziner. But the result would be a tangle of bad laws that would take decades to dig out from, he said.

Magaziner, who heads a White House task force that is drafting a proposed federal policy paper for electronic commerce, spoke at the Seventh Conference on Computers, Freedom and Privacy here. His views were echoed by Federal Trade Commissioner Christine Varney, who spoke later in the conference program.

Governments shouldn't levy international tariffs or taxes on Internet commerce, Magaziner said.

Last week's four-day conference was almost an annual reunion of the libertarian and pro-privacy political movement that runs strong in Internet circles.

BUILDING CONSENSUS

Speaker after speaker urged curbs on government efforts to control speech and government and corporate release of information about private citizens, either for law enforcement or marketing purposes.

Jason Olin, president of CDNow in Penly, Pa., said the key to corporate integrity in using and selling marketing information — such as customer buying patterns — is to tell customers what will happen to their data and allow them to choose not to get involved.

If we asked a bunch of lawyers "to think of every way a person could get screwed on the Internet, they could promulgate thousands of regulations."
– White House aide Ira Magaziner

"This market paradigm can be kind of scary for a privacy advocate," Olin said. "Because of the nature of the technology, we almost can't avoid collecting large amounts of data."

Speakers also advocated electronic payment methods that can't be traced back to the buyer or seller, so users can maintain privacy about what they are buying and to whom they are selling.

Law enforcement officials often oppose digital cash, claiming it would promote money-laundering and criminal transactions.

But David Chaum, chairman of vendor DigiCash BV in Amsterdam, said it can be harder to launder money with a properly established digital cash system than with regular cash.

Although fully anonymous electronic transactions would make criminal payoffs easier, a one-way anonymity — where the buyer is anonymous but the seller is known — could be traced by law enforcement, Chaum said. □

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Users shun intranet help desks; most want to dial, not browse

By Kim Girard and Julia King
NASHVILLE

HELP DESK MANAGERS who are scrambling to adopt intranet-based self-help technology shouldn't expect a quick return on their investments.

The No. 1 reason is that most end users remain wedded to costly telephone-based support, which costs companies an average of $2,743 per user annually, according to Gartner Group, Inc. in Stamford, Conn.

Telephone hot lines are so entrenched that less than 25% of corporate help desks respond to support requests over the Internet or an intranet, according to a survey of 758 companies by Help Desk Institute (HDI) in Colorado Springs.

"We're call-focused," said Joseph Markowski, a vice president of global customer service at The Chase Manhattan Bank Corp. in New York. He spoke at the Support Services Conference and Exposition held here recently. "A phone is so simple. Sometimes I think we get overrun by the high-tech spectacle. The vast majority of our customers aren't trying to send a rocket to the moon — they're just trying to print."

COMPUTERWORLD

For these and other related links, point your browser at *www.computerworld.com/links/970317helplinks.html*

► Help Desk Institute
www.helpdeskinst.com

► Help Desk List FAQ
www.duke.edu/pverghis/hdeskfaq.htm

NO ONE IS ANSWERING

How requests are handled when a help desk isn't staffed

Voice mail, answering machine	52%
Forwarded to support staff via pagers	30.5%
Forwarded to computer operations	28.1%
Electronic mail	22.4%
Doesn't apply	14.9%
No procedure specified	6.9%

Base: 821 respondents; multiple responses allowed

Source: Help Desk Institute, Colorado Springs

Some users simply don't have the technical savvy to use intranet self-help software. "The sad truth is we still have people who think a mouse is a walkie-talkie," said John Lawson, a support manager at National City Corp., a $50 billion banking company in Cleveland.

Nevertheless, scores of help desk managers are rushing to put their services on corporate intranets. Last year, 44% of companies polled by HDI said they use an intranet, and 32% said they planned to use one.

But many users remain skeptical of claims that self-service help is the wave of the future.

"Get with the real world," said a help desk manager from the retail grocery industry. "With downsizing, users are already doing additional work. They don't have time to be searching [help] databases."

"If users aren't using the help button [on their PCs] or a manual, who says they're going to use an intranet?" said Phillip Brodersen, team supervisor of systems and products at Amoco Corp. in Tulsa, Okla.

Perhaps the initial goal of Internet-based support should be to give users a choice, rather than to save big bucks, another user said.

"In every organization, you've got power users, and some get a charge out of [solving their own problems]," said Myron Blackmon, manager of the information resources solution center at Georgia-Pacific Corp. in Atlanta, which plans to build an intranet. "I haven't heard a lot of clamoring for [an intranet], but that doesn't mean employees wouldn't welcome it. You have to offer the channel based on what the customer wants."

Still, help desk managers figure the self-service approach will save some money — 20% to 30% by some estimates — even though many of them don't really know how much they spend now.

Nearly 62% of HDI member companies said they didn't know their cost-per-service request. Those that did know their costs reported figures between $10 and $19 per request. □

Human touch is a real help

Like a doctor with a soothing bedside manner, a living, breathing support technican goes a long way toward helping to cure users' hardware and software ills. That's why help desk managers such as Jane Schneider at CUNA Mutual Group in Madison, Wis., are purposely adding the human touch to their services.

For example, CUNA's help desk staffers visit each new user that migrates to Microsoft Corp.'s Windows NT. The visits last about 15 minutes, during which former mainframe terminal and Windows 95 users can ask questions and receive customized help.

"The idea is to make their first exposure to a new technology a pleasant one," Schneider said. This helps reduce user resistance, which in turn can cut down on calls to the help desk, she added.

At Blue Cross/Blue Shield of New Hampshire, users can reach out to any one of about 35 volunteer "PC Pals" — employees from various departments who have technical knowledge and are willing to share it with others.

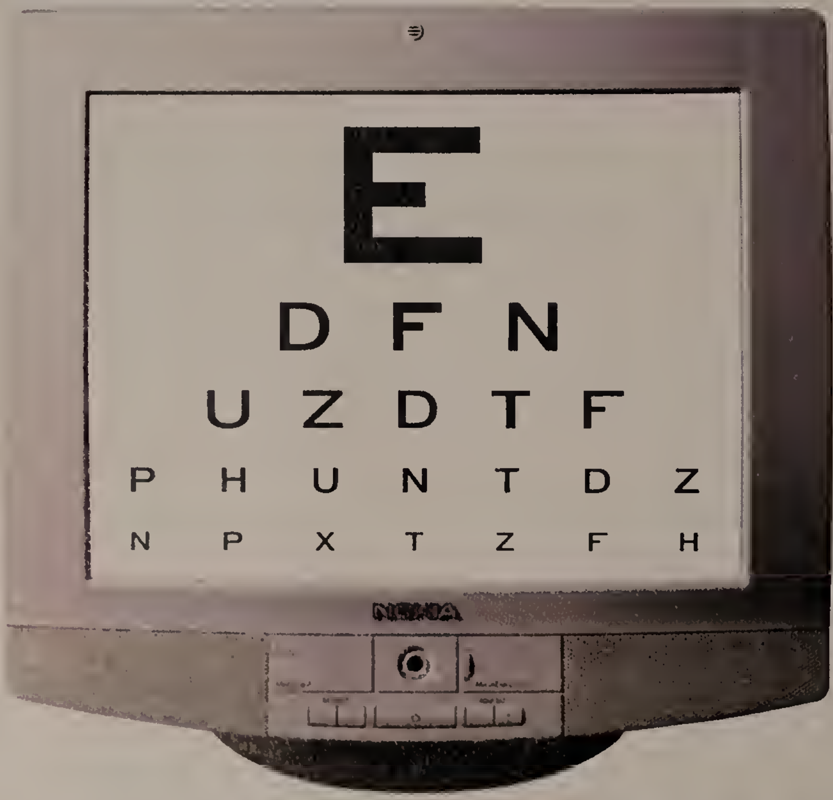
The PC Pals receive training in presentation and customer-support skills before teaching formal training classes and making themselves available to users informally on a day-to-day basis.

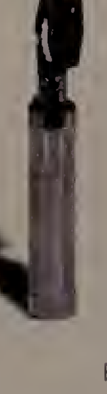
At a time when calls for support are on the rise at all companies, "it's a great way to extend the help desk," said Max Mayo, help desk manager at Blue Cross/Blue Shield in Manchester, N.H.

Meanwhile, Washington-based MCI Communications Corp., which offers help desk outsourcing services, has come up with what it calls "over-the-shoulder technology" that offers a virtual human touch. Using the online technology, an MCI technician can remotely take control of a user's desktop system to diagnose problems and make fixes while the user watches. Users also can chat electronically on screen with the technician.

That could cut the cost of traditional telephone-based support by as much as 70%, because live contact with users cuts down on back-and-forth messages, said Bill Price, vice president and general manager at MCI Systemhouse Call Center Services.

"What's needed [to be successful] is high tech and high touch," Price said. — Julia King





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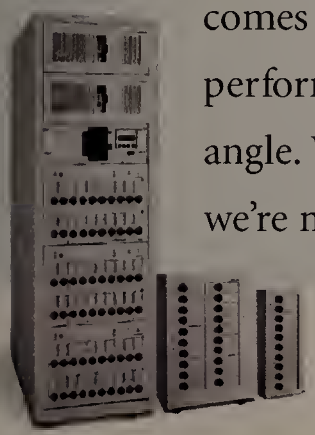

SPA faces money, mission worries

CONTINUED FROM PAGE 1

1996 financial forms are filed with the Internal Revenue Service later this year, SPA officials said.

Less software piracy in the U.S. means the Software Publishers Association (SPA) has fewer big thieves to target, so the group must pursue small and midsize companies instead.

But smaller violators usually pay smaller settlements.

This is reflected in the steady decline in the amount of money the SPA has won from companies caught with illegal software during the past five years. Settlements are down 19% since 1992 (see chart). Falling software prices are also a factor.

SPA President Ken Wasch says helping IS shops prevent piracy isn't his job

VIRGINIA LEE HUNTER

Yet Wasch's salary, which topped $306,000 in 1995, remains far above that of most of his colleagues.

For example, Robert Holleyman, president of the rival Business Software Alliance (BSA), made $137,500 in 1995. The median salary for directors at nonprofit organizations of similar size in the Northeast U.S. is $123,500, according to the Applied Research and Development Institute in Denver.

Wasch, 45, said the SPA's deficit was largely planned, as he pumps more money into antipiracy efforts in Asia. The group should be back in the black this year, he added.

Still, the 1,200-member association faces some stomach-twisting questions about how to make itself useful as the Internet shifts the bedrock of the software industry. Consider the following:

- The SPA spends a lot of money: $9.3 million in 1995, according to IRS documents. Yet piracy worldwide rises each year, according to the SPA's own estimates. Meanwhile, some critics doubt the validity of those estimates (see story at right).
- Threats of lawsuits may not work in the long term. The SPA has followed through to trial only once. And IS executives would rather see the SPA promote technological — rather than litigious — methods to deter software theft.
- The Internet has thrown the SPA for a loop. The SPA waved lawsuits in the faces of Internet service providers late last year, which resulted in a spate of anger-filled World Wide Web pages. The SPA was forced to rethink its Internet plans.
- Rival piracy fighter BSA has stolen some of the public relations noise from the SPA, grabbing big piracy settlements overseas and backing from Microsoft Corp. The BSA's 1995 budget of $16.3 million was twice that of the SPA.

"This is a very complicated industry, and, yes, we've got some transitional issues to sort through," said Bill Goodhew, chairman of the SPA's board. "But it's not much to worry about over the long term."

SPA FINANCES

The SPA showed a deficit of $338,497 in fiscal 1995 and is expected to report a loss of $137,000 for fiscal 1996

	1992	1995*
Income		
Total	$8.69M	$8.94M
Expenses		
Total	$6.78M	$9.28M
A sample of revenue items		
Litigation settlements	$3.66M	$2.98M
Membership dues	$2.43M	$2.86M
Conference revenue	$1.48M	$1.66M
Advertising	$256,560	$109,915
A sample of expenses		
Legal fees	$790,320	$1.16M
Consultants	$506,376	$843,982
President Ken Wasch's salary	$165,000	$306,520

*Most recent figures; final IRS forms for fiscal 1996 aren't available yet

Sources: Forms filed with the Internal Revenue Service and internal accounting documents

CODE OF SILENCE

Several IS managers and software vendors refused to talk about the SPA or the BSA. Companies that get raided, when they do agree to talk, speak of fear and anger — and chagrin.

Ed Parrish, corporate vice president of information management at Johnson & Johnson in New Brunswick, N.J., experienced an SPA raid firsthand several years ago at another firm.

"We fired some people who should have known better, including the [chief financial officer]," Parrish said. "You may not like what they do, but when you're doing something wrong, how can you argue?"

Parrish and other IS managers said they wished the SPA would focus on endorsing new technologies and licensing terms to fight piracy. For example, simpler software licenses would cut down on inadvertent theft, Parrish said.

"SPA could perhaps step in there to make up some guidelines. That would help us all out," he said. Named-user, per-user and other common license plans are "too tough on us and the vendors," Parrish said.

Better metering software also is key, said Michael Buzzell, chief information officer at Borden Global Packaging in Andover, Mass. Metering utilities are available from Norton Publishing Co. and other vendors, but the products need smoother hooks to business software packages, Buzzell said.

Wasch said providing such help to IS shops isn't his job. "Our central mission," he said, "is representing code and content [creators]. Period."

A reputation for intimidation and initiating lawsuits won't work on the Internet, which the SPA sees as its big emphasis this year. In fact, such tactics have already burned the SPA.

The group sued three small Internet service providers for copyright infringement last October to back up its position that providers should take partial responsibility for any copyright infringement their customers might perform online. A code of conduct to that effect, to be signed by Internet providers, was part of the SPA's plan.

All three cases were dropped within two months. None of the providers paid a settlement, but they changed their usage policies to clarify that accounts could be shut down if users broke laws. □

What the SPA does

Job No. 1 for the SPA is to erase software piracy worldwide. But that isn't all the SPA does for its 1,200 software vendor members.

Raids and audits of IS books are a major path toward ensuring that user companies have proper licenses for all PC packages.

But the number of raids has declined in the past few years as formal "cease-and-desist" letters quickly persuade targeted companies to clean up their acts.

About 2,000 IS workers have taken SPA's one-day, $390 software management class. The group also sells videos, sample software management policies and other educational material on copyright protection.

Lobbying the federal government is an increasingly big part of the SPA's mandate. For example, the SPA wants looser encryption laws.

Also on the agenda is forcing China, through tighter trade policies, to enforce copyright protection rules.

— Kim S. Nash

Tallying stolen booty can be complex calc

By Kim S. Nash

THE FIGURES for last year haven't been tallied yet, but in 1995, pirates purloined $13.2 billion in software, according to SPA and BPA officials.

How the heck do they know?

The two antipiracy groups previously put out separate figures, using different calculation methods. But sometimes their estimates varied wildly, so the BSA and SPA called a truce last year.

Now the estimation is done by a third party, International Planning & Research Corp. (IPR) in Redmond, Wash.

FIGURING IN

In broad strokes, here's how the calculation is done. Data on PC hardware sales is compiled from BSA and SPA associate-member firms. Software vendors report their own unit sales.

IPR then factors in norms about software use in different regions of the world.

For example, U.S. users typically run five or six applications per PC. In Western Europe, the number is slightly lower. There are different rules for business use, home-business use and recreational use.

The total value of stolen software is the unit difference between software sold and software thought to be in use, multiplied by the wholesale price of each software package in question.

For example: In 1992, less than one-third of a unit of software was sold for every PC in Italy. So two-thirds of the software used in Italy was said to be pirated — more than that if you figure that each user ran more than one application. □

Bruce Robertson, Director of Information Technology and Rodney Rogers, Vice President of Operations, Florida Crystals.

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- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

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Networking Products ☐ Yes ☐ No
Intranet Products ☐ Yes ☐ No

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Computer Industry

StorageTek challenges IBM

▸ *Seeks to set standard for tape technology*

By Tim Ouellette

MAINFRAME TAPE STORAGE

STORAGE TECHNOLOGY Corp. is developing new mainframe tape storage technology that could challenge IBM's position as the standard-bearer for tape storage.

Even though StorageTek leads IBM in market share, IBM technology traditionally has been the standards leader for tape technology because the company sells the majority of mainframe systems.

But if users follow StorageTek's lead and adopt the new products based on an alternative standard, that could all change. StorageTek could set the de facto standard.

The tape drives and cartridges promise more flexibility and faster performance than current systems and add compatibility with existing StorageTek tape libraries, which dominate the mainframe tape market.

This position of strength, which some analysts put at more than 50% of the mainframe tape market, gives the Louisville, Colo., firm better footing to impose the new, non-IBM standard on the tape market by next year (see chart).

"IBM is losing their grip as the controller of standards for mainframes," said David Adams, director of networked services at National Life of Vermont in Montpelier. "Who knows what the next tape standard will be?"

A Unix version of the technology will be tested later this year, with mainframe versions following in the first quarter of next year.

StorageTek's move on IBM comes at a time when the companies work hand in hand on the mainframe disk front. IBM resells StorageTek's mainframe disk systems under the Ramac brand name.

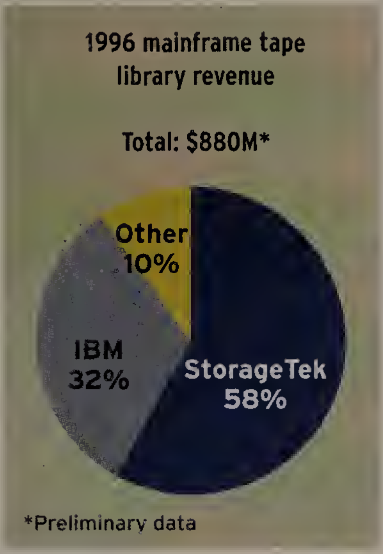
This is an example of the numerous "coopetition" deals many companies in the industry put into place to strengthen their position in a particular market segment.

For example, StorageTek CEO David Weiss said the proceeds from the disk deal with IBM will play a part in his firm's development of the new tape technology.

"StorageTek is taking on [IBM] standards for enterprise tape," he said.

But IBM won't stand idly by. Later this spring, IBM's Storage Systems Division in San Jose, Calif., will announce plans for a Virtual Tape Server feature to improve data management on its Magstar tape products. Magstar is touted as the next generation to IBM's long-serving, market-standard 3480 drives. And Magstar is taking some market share from StorageTek, said Robert Gray, an analyst at International Data Corp. in Framingham, Mass.

StorageTek's new tape drive and cassette combination, developed with help from Imation Corp. in Oakdale, Minn., promises to give users more scalability and performance than current tape specifications and let them keep existing tape library and robot systems.



Source: International Data Corp., Framingham, Mass.

The drives will also process data faster because the new cassettes will use separate supply and retrieve reels, similar to music cassette tapes, Weiss said.

More important, users will be able to load the tapes with a range of data types — from low-end Windows NT or Unix data up to mainframe-based information — without purchasing new tape-library systems. □

IBM invests in NetObjects for better Domino link

By Barb Cole-Gomolski

IBM AND its Lotus Development Corp. division last week answered user cries for a Web-friendly development tool for Domino, the Lotus line of server software.

IBM last week bought a majority interest in NetObjects, Inc. in Redwood Shores, Calif., which makes the Fusion Web design package.

Details are sketchy, but a Lotus source said a bundle that includes a version of NetObjects for Domino and the Domino World Wide Web and messaging server is likely.

Dennis Murray, head of cooperative technologies at a division of Novartis Pharmaceuticals Corp. in East Hanover, N.J., a large Notes shop, said integrating a Web design tool could make it easier to sell Domino as a Web server inside a large company.

Fusion supports several Web servers, including those from Microsoft Corp. and Netscape Communications Corp., so there would be no feeling of vendor lock-in, Murray said.

STORY TO TELL

At a minimum, the deal ensures that NetObjects will develop a version of Fusion for Domino, said David Marshak, vice president of Patricia Seybold Group, a research firm in Boston. "Lotus needs to have a story for developers who don't want to use the Notes development environment," he said.

The investment gives Lotus more than 60% of NetObjects' equity and the majority of its board seats in exchange for IBM stock. Company officials didn't disclose further financial details but said the privately held NetObjects would retain its independence, continue its partnerships with Lotus competitors and eventually go public. □

Sprint taking suitor's call?

Sprint Corp. and its global partner, France Telecom, are downplaying published reports that Cable & Wireless PLC is striking up a deal to spend $15 billion to buy the remaining 80% of Sprint.

The Wall Street Journal Europe **reported last Wednesday that Cable & Wireless in London was seeking approval from Sprint's partial owners, France Telecom in Paris and Deutsche Telekom AG in Germany, which each hold 10% stakes in Reston, Va.-based Sprint through the Global One alliance. The report said Cable & Wireless was in talks with France Telecom. The news sent Sprint's stock up nearly 5% last Wednesday.**

Sprint's chairman and CEO William Esrey, in a written statement issued last Wednesday, said such a deal isn't possible because of "the terms of a standstill agreement Sprint has with France Telecom and Deutsche Telekom." But he also said Sprint would entertain the right offer, if it came along.

The match makes sense, said one analyst, particularly in light of competitor British Telecommunication PLC's bid to buy MCI Communications Corp. last year — a merger that would be the largest in telecom history.

Since then, Cable & Wireless has been looking for its own suitable partner for a joint venture, said Keith Mallinson, managing director of The Yankee Group consultancy in London. — Kim Girard and Kristi Essick of IDG News Service

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UNIX SYSTEMS

HP denies workstation unit sell-off

By Jaikumar Vijayan

HEWLETT-PACKARD CO., under pressure from low-cost Windows NT boxes, is slashing Unix workstation production costs but denied last week that the business unit is up for sale.

The latest rumors of a Unix/RISC workstation sell-off apparently were triggered by the ongoing relocation of some of HP's workstation-related manufacturing, marketing and management functions from plants in New Hampshire and Massachusetts to Fort Collins, Colo.

HP last week said it is still looking for an outside contractor to manufacture and assemble workstation-related products being made at HP plants in Exeter, N.H., and Fort Collins.

> "The [low-end] Unix workstation market is stalling a little bit because of Windows NT."
> – Analyst John Dunkle

The outsourcing move is part of an announcement HP made last November to move its Unix workstation headquarters from Chelmsford, Mass., to Fort Collins.

HP said the moves were part of an attempt to cut the manufacturing costs of its PA-RISC workstations.

In the past few months, major Unix workstation vendors including HP, Silicon Graphics, Inc., Sun Microsystems, Inc. and Digital Equipment Corp. have been forced into a series of defensive moves because of the growing threat of Windows NT-based workstations. This included dramatic price reductions and dual Windows NT/Unix workstation strategies.

"The [low-end] Unix workstation market is stalling a little bit because of Windows NT," said John Dunkle, president of Workgroup Strategic Services, Inc. in Portsmouth, N.H. □

OPINION

Keeping secrets Pundits are going ballistic over the thought that someday humans might be cloned. Yet we virtually ignore one of today's real ethical crises: the release of genetic records that should be strictly confidential.

Researchers are rapidly identifying genes for conditions such as alcoholism, cancer, cystic fibrosis, Alzheimer's disease and manic depression. But just the hint of such a genetic trait in someone's medical record can be catastrophic once the file is zapped to insurers and employers. People have been denied insurance or lost their jobs because they have a predisposition for some costly disease.

Take the case of a healthy woman who casually mentioned to her doctor that her father was diagnosed with Huntington's disease and that she might have inherited that gene. She was later denied disability insurance because the conversation was noted in the margin of her medical record.

A survey of 332 people with family genetic disorders found that 43% had experienced insurance or job discrimination. Recent legislation outlawed some forms of genetic discrimination, but it still happens.

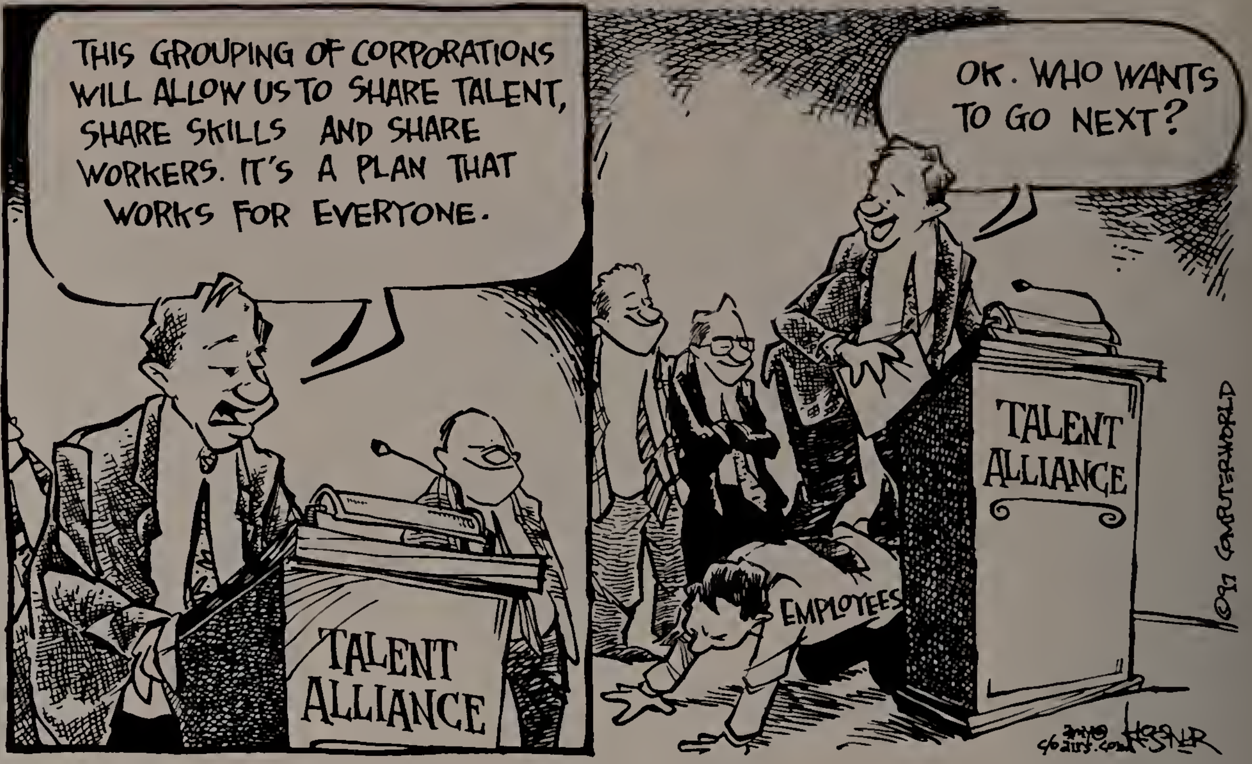
As we wait for comprehensive medical privacy legislation [CW, March 10], corporate information managers need to become the strong-willed stewards of this sensitive information, which increasingly is shared on electronic networks.

Employers should establish policies that keep medical records tightly controlled and fire anyone who breaks the rules. Don't let genetic data spill into regular personnel files, where clerks can snoop, and supervisors can do real damage.

Developing and enforcing these "fair information practices" is the right way to treat employees, and it might even avoid a lawsuit. Sounds like something a CIO should do.

Mitch Betts.

Mitch Betts, *associate editor, news*
Internet: *mitch_betts@cw.com*



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LETTERS

Don't lump applets together

YOUR ARTICLE ["Screening for applets," CW, Feb. 10] implies there is no difference between Java applets and ActiveX applets. In fact, there are huge differences.

Java has built-in security that won't permit applets to access client file services, nor can the applet exist on the client machine after the browser is terminated. ActiveX has no such built-in security. The article cites the Chaos Computer Club's ActiveX applet, which instructs bill-paying software to send money to the hacker's account.

I defy them to do the same thing using a Java applet. It can't be done.

Richard M. Schultz
Whitehall, Mich.
schultrm@river.it.gvsu.edu

Contractors lose freedom

YOUR RECENT article "Independent contractors an endangered species," [CW, Jan. 27] illustrates a disturbing feature of America's treatment of its high-tech industry. We disagree with your premise that independent contractors are a "dying breed." But it is an undeniable fact that unreasonable government rules are interfering with the freedom of choice of high-tech staffing firms and independent contractors to establish their business relationships. About 20% of the high-tech professionals used by staffing firms are independent contractors.

Our organization, The National Association of Computer Consultant Businesses (NACCB), believes that if a high-tech professional wants to be self-employed, technical staffing firms should be able to hire him or her as an independent contractor according to simple rules. The Microsoft case mentioned in your article is an extreme example of what can go wrong when the rules are not followed.

Technical staffing firms today have to spend their time thinking about lawsuits, federal tax rules, benefits and liability, even though such concerns are solely related to whether a worker should be an independent contractor or an employee.

Federal tax rules target high tech

The problem in the high-tech industry is even more acute because of Section 1706 of the 1986 Tax Reform Act. That law targets the high-tech industry and makes it uniquely difficult for the technical staffing industry to use independent contractors.

The NACCB successfully persuaded the IRS to liberalize its rules regarding the use of independent contractors by staffing firms, and we are continuing our efforts to repeal Section 1706.

Steve Lipson, president
Harvey Shulman, general counsel
NACCB
Washington

Suffering from software

EDITOR PAUL GILLIN's Up Front column in the Jan. 20 issue says it all. Software really is worse, and there's an endless barrage of Microsoft and other manufacturers' products. Who can keep track of it all? Worse yet, the stuff is so complicated that even a professional programmer would spend two to three years debugging even the most seemingly minor fix to a current release.

I hate to say it, but big is not better, and I long for the days when it won't take 1G to 2G bytes to cover just the programs, let alone the data files. Please keep up the good work, report the stuff as you see it, and let's get back to basics.

Dave Farney
Novi, Mich.
dfarney@softelco.com

Don't blame IRS for trying

IN MICHAEL SCHRAGE'S Feb. 10 column, he writes, "A truly effective IRS ... would likely prove a living hell for America." Unfortunately for Schrage, the government doesn't curtail its spending simply because of the IRS' ineffectual collection methods. Who does he think makes up the deficit created by those who don't pay their taxes? Schrage does, and so do you and I.

The $3 billion to $4 billion spent by the IRS pales against the billions lost every year to tax cheaters. Despite its missteps, I applaud the IRS' efforts to collect every penny due. Apparently, Schrage would rather be part of the problem than part of the solution.

Richard Jeantheau
Naperville, Ill.

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Thou shalt avoid contamination

Robert L. Scheier

It's a classic moment in the absurdist comedy *Monty Python and the Holy Grail.* A young, priestly type is telling the knights how to throw "the Holy Hand Grenade." After pulling the pin, he drones, "Then shalt thou count to three. No more, no less. Three shalt be the number thou shalt count. ... Four shalt thou not count, nor either shalt thou count to two, excepting that thou then proceed to three."

I was reminded of that scene while, of all things, talking with a consultant about making electronic data interchange (EDI) systems year 2000-compliant.

EDI applications, like a lot of older software, traditionally have represented years with only two characters. To avoid messing up one another's applications, EDI users must agree on a common method for representing years after Jan. 1, 2000.

In Python-like fashion, the EDI community has spent more than eight months debating a standard, with no agreement expected until at least mid-April. Mayest thou transmit either two-digit or four-digit years, leaving it to software on either end to calculate the actual year? Or shalt thou transmit only four-digit years, meaning older applications won't be upwardly compatible?

You and your trading partners need a year 2000 standard. Deadline? Now.

Like the hapless knights seeking the Grail, EDI customers got all tangled up in procedural issues when they should have been storming their enemy — the year 2000 bugs that could wreck their businesses. Whether or not you use EDI, you, too, could get bogged down in the EDI standards mess.

All across the corporate landscape, big companies such as Sears and Visa are pressuring their suppliers and business partners to prove they are year 2000-compliant. Boeing and Wal-Mart can't afford to miss shipments of critical goods because their suppliers' software is messed up [CW, March 3].

How long will it be before one of your biggest customers or trading partners demands proof you're year 2000-compliant? And what happens if your biggest customer holds you responsible not only for your systems, but those run by your suppliers? If your trading partners are smart, they'll demand you meet a formal standard for year 2000 compliance.

But there's no one source for this Holy Grail of a standard. In the case of EDI, the American National Standards Institute is doing the haggling. In the securities industry, it's being done by a group of volunteers. Some large customers are using guidelines from the ever-influential Gartner Group. Even some vendors are trying to establish year 2000 standards, but none has won widespread acceptance. Among other obstacles, who wants to get stuck with the legal risk of certifying that an application is year 2000-compliant when it isn't?

So what's an IS manager to do? First, recognize that you won't be done with your year 2000 repairs until you can prove to your trading partners you did those repairs right. Second, raise the issue with your trading partners and agree on how you'll define year 2000 compliance. Third, make sure your year 2000 conversion will meet that compliance standard.

And lest ye waste time, remember what happened to Monty Python's knights. They wandered around in confusion until the film ended with a bunch of 20th-century cops hauling them off in paddy wagons. Don't let the 21st-century compliance cops do the same to you.

Scheier is Computerworld*'s senior editor, management. His Internet address is robert_scheier@cw.com.*

The dirty secret behind the SAP bandwagon

Michael Schrage

I have a confession: I have never been directly involved in an implementation of SAP's R/3 client/server suite. Then again, I have many SAP-savvy friends and colleagues who love to complain.

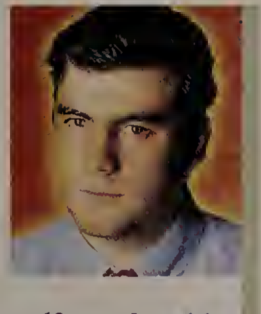
Their tales of woe have much in common: R/3 takes longer and costs more to implement than everybody expected, consultants included. Indeed, the company becomes beholden to the consultants in ways that give top management the creeps. Training turns into a capital investment. The entire organization has to re-engineer itself around the software's constraints.

My point here isn't to criticize R/3 or SAP. That's unfair and misses the point. The gnawing question is, why has a company with a product offering as challenging as R/3 been so successful? Why have so many humongous organizations effectively turned their process management over to this software? Do the long-term benefits so clearly outweigh the short- to midterm costs that the implementation decision can be made strictly by the numbers? In an era of decentralization, distributed computing, departmentalization, intranets and Webification, does it really make sense to install an infrastructure that serves as a de facto medium for centralization, command and control?

PREDICTIONS

Asking these questions makes sense at any time. But the need for intelligent answers became all the more compelling as I reread an excerpt from Paul Strassmann's forthcoming book, *The Squandered Computer.* Once again, Strassmann — a former Xerox executive, Pentagon CIO and IT number-cruncher extraordinaire — reaffirms the dirty little secret of our business: There isn't any correlation between IT spending and corporate performance. Indeed, it's almost impossible to find an industry where profitability can be linked in any meaningful way to IT expenditures.

The unambiguous message Strassmann proffers is that the quality of IT management matters far more than the quantity of IT spending. Trite? Obvious? Perhaps. But CIOs and their bosses have a rich tradition of ignoring, belittling or denying the obvious.



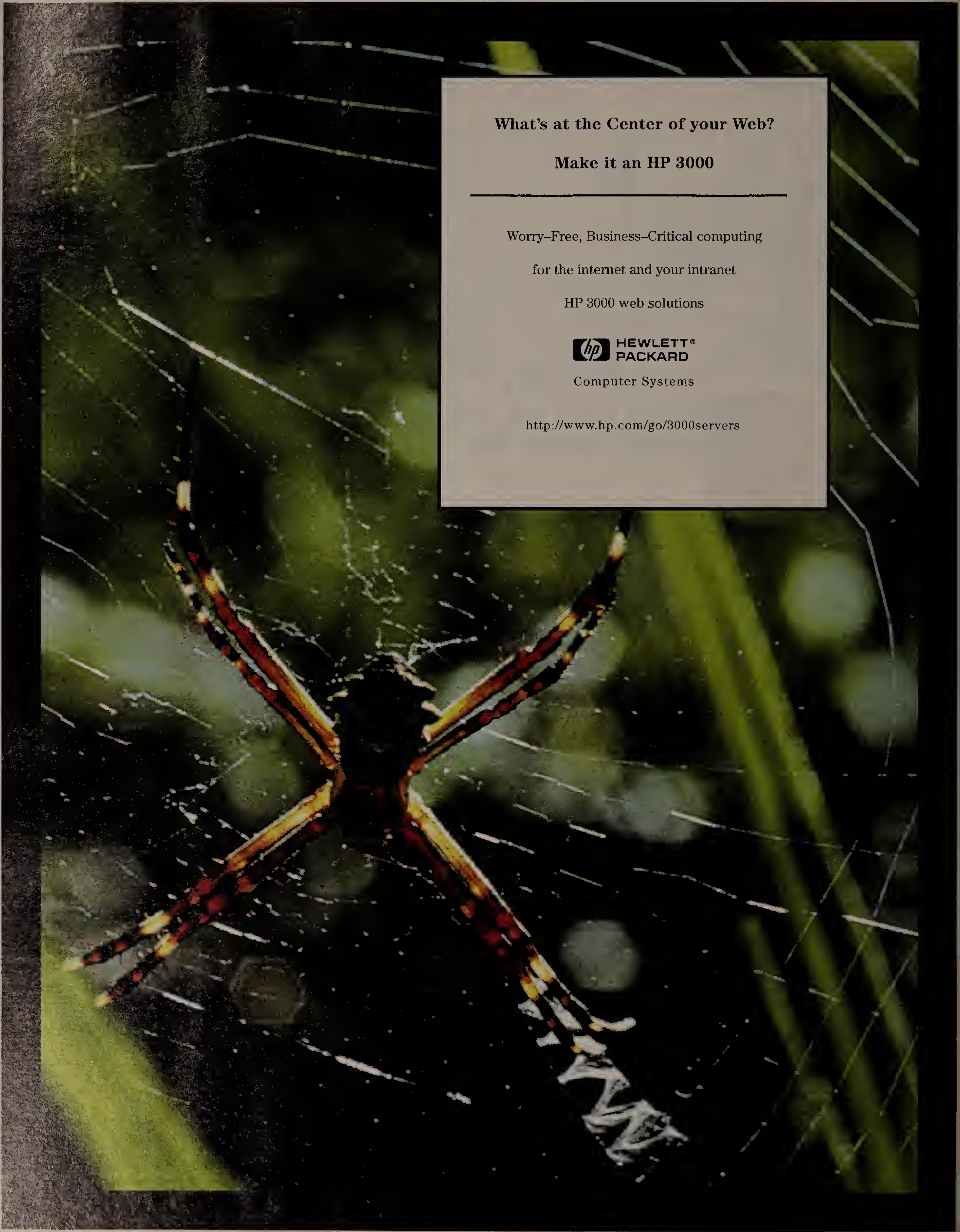
To wit, do most organizations see an R/3 implementation as an investment in technology or an investment in the management of technology? How will an R/3 implementation change the way the company assesses its IT return on investment (ROI)? Is the real value of R/3 in the way the system manages information or the way the system manages the people who manage information? Of course, you can ask the same questions substituting the word "intranet" for "R/3." But I think something else is going on here beyond a big bet on a powerful technology. My strong belief is that SAP's success is the product of the organization's desire to establish dominant central control of IT — a virtual headquarters for communications, command and control operations — as much as it represents a sincere desire to boost IT productivity.

SAP's success lies in the corporate desire to control and centralize computing.

In fact, I will be very curious come the year 2001 to see just how many SAP implementations have outperformed alternate infrastructures in terms of ROI. My bet is that we will see precisely the same kind of noncorrelations between corporate SAP spending and profitability as we have for past IT spending.

That underscores an important point about IT investment: Corporate power and politics still matter more than productivity when it comes to shaping Fortune 1,000 infostructures. That isn't cynicism, it's pragmatism. SAP, to its great credit and greater fortune, knows this.

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His address is schrage@media.mit.edu.*



COMMENTARY

Vendors fiddle, Rome burns

DAVID MOSCHELLA

So IBM, Netscape, Sun and Oracle have agreed to make their software objects interoperable [CW, March 17]. That's nice, but it's a shame it doesn't really matter.

It just confirms the rather sardonic notion that proponents of Microsoft alternatives will try to work together in all areas except those that might actually make a difference.

While the big four fiddle with their objects, Rome continues to burn.

Netscape, through lack of marketing and the need to sell its software, has virtually ceded the consumer market to Microsoft — as if the consumer and business worlds were somehow independent of each other.

Is there any doubt that home PC users often are the same people who drive corporate computing? Who doesn't want their home and business systems to be as compatible as possible?

IBM's thinking may be clearer, but it's no more helpful. With its AIX and OS/2 operating systems going down the tubes, IBM has little choice but to embrace its future as a Windows NT reseller.

But IBM also has decided to sit back and watch Netscape and Lotus become bitter enemies, engaged in an increasingly savage battle for the hearts and minds of the Fortune 1,000 intranet builders.

IBM also seems content to cede to Microsoft the consumer and small-business sectors. And I thought the computer business was driven by high-volume markets.

STEADY SUN

Sun is at least consistent. It's always been anti-Microsoft and anti-PC. In fact, with IBM, Hewlett-Packard and Digital having chosen other paths, Sun is arguably the only major systems company that actually cares if Netscape succeeds. Maybe these two will eventually do something important together. There's just one problem: Sun's presence in the enterprise market, although rising, is still tiny compared with that of IBM or Microsoft.

Which brings us to Oracle and the basic question of who cares?

Oracle remains a fine high-end database and applications company, but it's only loosely connected to today's critical Internet/intranet competition. Database vendors can talk all they want to about the long-term need to integrate structured and unstructured data. But the operative phrase remains "long term."

Once again, key vendors are allowing their narrow, short-term interests to outweigh any sense of long-term strategy.

The reality is that IBM/Lotus, Sun, Oracle, Netscape and Novell are all increasingly dependent on the high-end enterprise customer. This gives Microsoft a relatively free hand in the emerging small-business and consumer sectors.

Each can cite its reasons for this strategy, but collectively it all seems rather self-defeating.

One of my most telling memories of the Unix standards battles of the early 1990s is a discussion I had with a high-level HP executive. After I pointed out the obvious fact that divisiveness among the Unix vendors only served to pave the way for Windows NT, the executive nodded and said, "Yes, but you see, it's all Sun's fault. They want too much, and I would rather see Microsoft take over than give Sun its way."

I'm afraid not much has changed. ☐

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david_moschella@cw.com.

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Servers & PCs

Large Systems ♦ Workstations ♦ Portable Computing

Briefs

Data mining for S/390

J. D. Edwards & Co. has upgraded its OneWorld suite of business applications for S/390 platforms. In Version B71.4, the Denver firm lets users access OneWorld applications from the Internet and create systems-guided workflow processes.

Servers adapt to IBM

IBM's Storage Systems division in San Jose, Calif., has announced the 7190 SCSI Host to SSA Loop Attachment. The adapter lets Sun Microsystems, Inc. or Hewlett-Packard Co. Unix servers attach to IBM Serial Storage Architecture disk subsystems. It costs $4,500 and will be available this month.

Futuristic storage

Imation Corp. in Oakdale, Minn., a spin-off from 3M, last week announced an agreement with TeraStore Corp. in San Jose, Calif., to develop media for a new class of rewritable mass storage based on Near Field Recording technology. Included in the deal is a technology designed to boost storage to 20G bytes. Products are expected in about a year.

Amdahl extends RAID

Amdahl Corp. in Sunnyvale, Calif., has announced Fibre Channel connectivity for its LVS 4500 disk storage systems. Fibre Channel lets users house storage systems at sites up to six miles away from a data center, instead of being bound by the transfer rates and distance limits of SCSI interfaces. The support increases storage throughput to 200M byte/sec. and preps the LVS 4500s to provide storage to Unix server clusters.

Secondhand Blues

IBM Credit Corp. recently opened a World Wide Web store where shoppers can use a credit card to buy refurbished IBM PCs. The site (mer.shop.ibm.com/shopping/ibmcredit) offers a variety of systems backed by a seven-day money-back guarantee and 90-day quality assurance.

SERVER MARKET

NEC joins high-end Pentium Pro battle

By April Jacobs

PLAYING "follow the leader" to companies such as Hewlett-Packard, IBM, Compaq and Dell, NEC Corp. plans to launch its four-way ProServa HX into the high-end Pentium Pro server market later this month.

NEC hopes to take advantage of a Pentium Pro server market that is beginning to challenge low-end Unix offerings, said Susan Frankle, an analyst at International Data Corp. in Framingham, Mass.

JOIN THE CROWD

The ProServa HX will compete with products from Dell Computer Corp. in Round Rock, Texas, and Compaq Computer Corp. in Houston, both of which entered the high-end Pentium Pro server market in the past six months.

Unix staples such as IBM's RS/6000 also will compete with NEC's entry, Frankle said. And Unix server vendors, such as Palo Alto, Calif.-based Hewlett-Packard Co., will offer Pentium Pro products that compete with their own Unix servers in a bid to keep customers from moving to other Pentium-based system vendors, Frankle said.

Charlie Auletto, director of news data systems at CBS News in New York, said he switched to ProServa after Microsoft Corp. and NEC announced last summer that they would no longer support Windows NT on some RISC-based systems that are commonly used to run Unix servers.

"The switch was not by choice, but I'm pretty happy so far," he said.

NEC, page 42

PROSERVA HX

- Up to four 200-MHz Pentium Pros
- RAID storage
- Price: $23,000 to $38,000
- Availability: End of the month

Users doubt security of 'net printing

By Matt Hamblen

VENDORS in recent weeks have announced new products and plans to allow for printing digital documents over the Internet. But potential customers are skeptical that their transmissions will be secure.

Printer vendors say the market could be large because printing over the Internet can save users the cost of faxing over long-distance telephone lines.

But analysts and users said the idea of sending sensitive files over the Internet for printing raises serious security and reliability questions — even after considering some recently announced products [CW, March 17].

Given what some observers see as ripe market potential, this relatively new area continues to draw vendor activity.

The following companies recently made these Internet printing announcements:

▪XCD, Inc. in Tustin, Calif., announced the $49 PrintraNet remote Internet printing software. It lets a PC user at one site print a file on a remote printer by sending the document as a standard electronic-mail message.

▪Sun Microsystems, Inc. in Mountain View, Calif., has

Users, page 43

Tax board bulks up for avalanche

CALIFORNIA'S FRANCHISE TAX BOARD STATISTICS

- Each year it collects $22 billion in tax revenue from individuals, banks and corporations.
- It expects to receive 15 million tax returns by April 15.
- Its tax revenues make up 53% of California's general fund.
- Taxpayers who file in January and February can expect a refund within two to four weeks.
- Those who file in March and April have to wait six to eight weeks as returns pile up.
- 140,000 returns are processed nightly on its mainframe database.

▸ *Updated databases handle seasonal rush*

By Tim Ouellette

THIS TIME OF YEAR the state of California isn't bracing for floods, earthquakes or wildfires. It's waiting for an avalanche of tax returns.

But the Franchise Tax Board (FTB) in Sacramento, the state's tax collection agency, is well-prepared. It has three mainframe databases that have been updated to process returns quickly, give taxpayers their refunds and forward tax revenue to the state's coffers.

"Tax season is in full bloom. At this point we are full tilt as far

Tax board, page 42

DEC posts Alpha as Win NT alternative to Intel

▸ *Fewer apps, lower Intel prices may hurt*

By Jaikumar Vijayan

CHIP MARKET

DIGITAL EQUIPMENT CORP. last week announced a line of low-cost Alpha chips aimed at giving users an alternative to Intel Corp. PCs in the Windows NT space.

But a relative lack of native Alpha applications and falling Intel PC prices could once again limit the chips' appeal to a narrow segment of users. Despite the low cost of the chips, systems based on the latest Alphas are still likely to cost more than Intel PCs, analysts said.

In its most aggressive bid yet to expand the market share of its Alpha RISC chips, Digital last week released the Alpha 21164PC chip, which it co-developed with Mitsubishi Electric Corp. in Japan. The chips are low-cost versions of Digital's existing Alpha chips and will be available in three clock speeds (see chart, page 43). Prices start at $285.

Systems based on the chip will offer top-of-the-line Pentium performance at prices much lower than previous Alpha systems, analysts said. Digital said PCs that run its new Alpha chips will start at less than $2,600, compared with more than $4,000 for previous entry-level Alpha systems.

"There is no question that Digital's new chips fall in the same competitive category as Intel" as far as performance is concerned, said Dean McCarron, an analyst at Mercury Re-

DEC, page 43

Tax board bulks up

CONTINUED FROM PAGE 41

as returns coming in," said the FTB's database administrator Jon Schmitt last week.

FTB officials said they expect 15 million personal tax returns to reach their offices by April 15 (see chart, page 41).

Schmitt and his staff monitor three Software AG Adabas MVS databases running on a 400-MIPS Hitachi Data Systems mainframe. The databases manage records for more than 30 million taxpayers, along with historical tax data.

The FTB increased performance in the databases because Software AG added features that take advantage of storage hardware improvements. So the FTB added high-speed disk storage systems and took advantage of Adabas' Delta Save feature to chop at performance bottlenecks.

KEEPING PACE FOR THE FIRST TIME

"We are processing 140,000 tax forms a night now," Schmitt said. "But we are getting in that number every day. Never before have we been able to keep up with the returns each day."

For example, Adabas' Delta Save feature backs up only altered data, cutting the daily backup window from several hours to 15 minutes and freeing up the processor for other applications.

Also, the backups fill only dozens of tapes compared with hundreds of tapes in past years.

And Adabas now can read a whole disk cylinder's worth of data at one time, instead of just one track of data. This speeds up data retrieval.

"With these changes, in concert with fast [direct access storage devices], we've been able to pick up some speed there," Schmitt said.

With database applications and associated data accounting for so much storage consumption now, storage systems must be optimized for this application set, said Thomas B. Lahive, an analyst at International Data Corp. in Framingham, Mass., in a recent report.

During the day, Adabas manages about 1,000 calls per second from the 3,000 online users processing incoming forms; the overnight batch processes can handle 2,500 transactions per second.

The FTB is one of many California state agencies that use Adabas and other software from Software AG. In fact, Software AG's main source of revenue is from state and local government contracts.

Adabas has been a long-serving mainframe database with an installed base of about 5,000 sites worldwide, mostly in Europe.

But leading analysts said Adabas (in combination with its relational product Adabas D) has only about 1% of the database market, behind IBM's DB2 and Oracle Corp. ☐

NEC joins battle

CONTINUED FROM PAGE 41

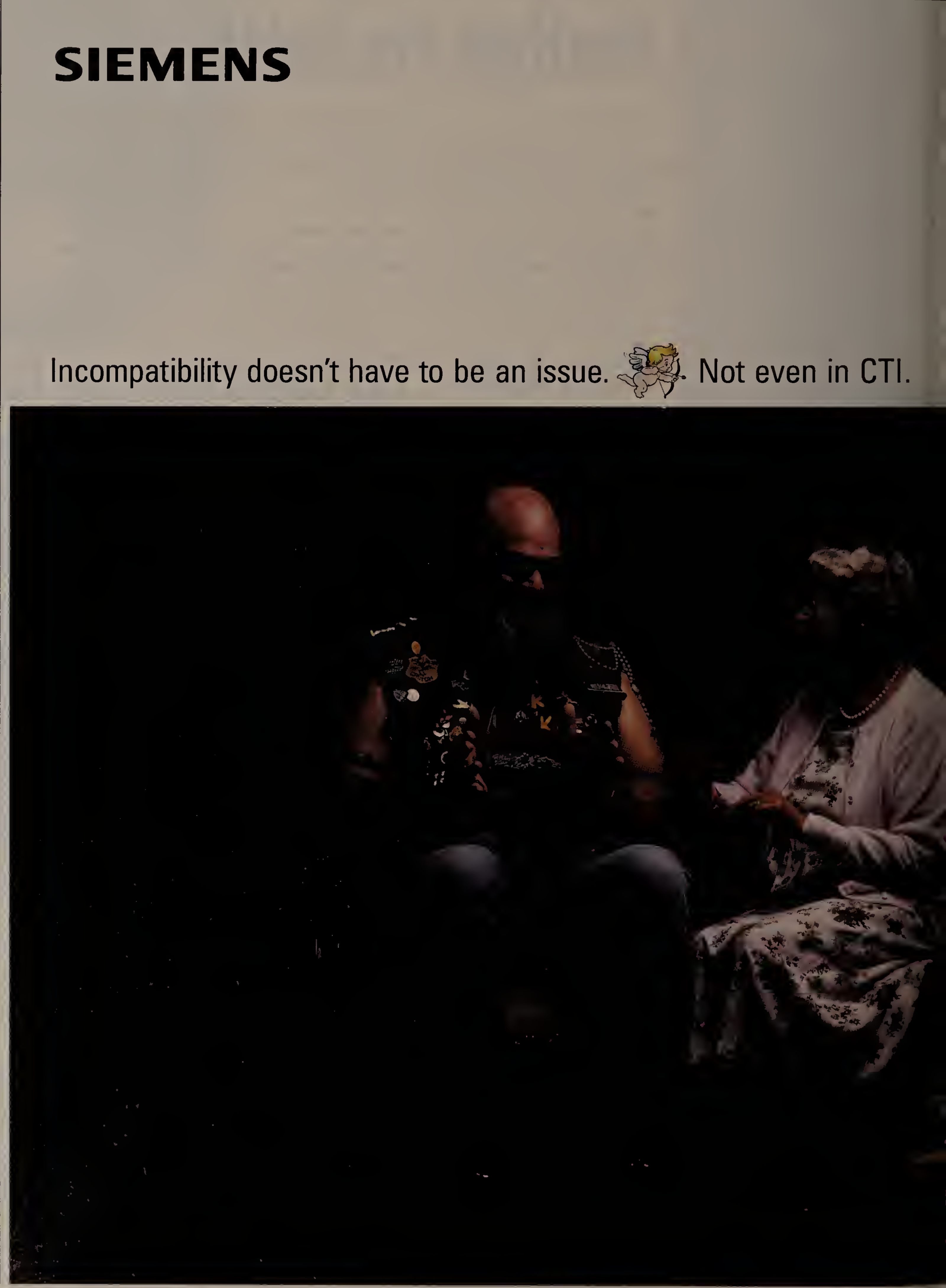
Auletto said he chose NEC because the company offered superior service, including configuration support and post-sale support for which he has a contract.

Robert Dorin, a senior analyst at Aberdeen Group, Inc. in Boston, said NEC is an established desktop vendor, but it is joining what is becoming a crowded NT market.

"[NEC is] going to have to bring something to the table that will motivate customers to buy from them what they already can get elsewhere," Dorin said.

During the introductory period of the ProServa, NEC is offering a processor and RAID on-board at no additional charge to the base configuration price, Dorin said.

The ProServa HX, which features support for up to four Pentium Pro processors and RAID, ranges in price from $14,720 to $16,600 for entry-level configurations. A fully loaded configuration can cost up to $50,000. ☐


SIEMENS
Incompatibility doesn't have to be an issue. Not even in CTI.

Users doubt 'net printing

CONTINUED FROM PAGE 41

joined the Salutation Consortium, a global group that is developing a standard for locating and managing devices across the Internet.

▪Microsoft Corp. in Redmond, Wash., is poised to enter the market after unveiling its Internet printing concept before a section of the Internet Engineering Task Force, a group of vendors working on a series of Internet standards. According to Microsoft's plans, printers would be attached to a Windows NT print server, and end users could print documents over the World Wide Web by finding the printer's uniform resource locator. Microsoft officials declined to comment on specific product plans.

Sending print jobs to a remote printer over the Internet may have appeal, but security is still a concern, said Vince Agresti, director of information systems at Management Recruiters International in Cleveland.

"I'd want the files to be encryptable," Agresti said. When told that XCD touts its Internet printing software as being as secure as E-mail, he answered: "Saying your print job is just as secure as E-mail is like saying something's just as secure as a cell phone."

Agresti said his company produces legal, sales and office manuals and could benefit by having high-quality printing on demand at its 700 regional offices. ☐

DEC aims at NT

CONTINUED FROM PAGE 41

search, Inc. in Scottsdale, Ariz.

Digital said it will use the chips in future systems but didn't specify when it will start to ship them.

"Alphas are already known to be pretty solid chips. It looks like the new ones are going to give even more bang for the buck," said Thomas Joyce, a software engineer at Carnegie Mellon University in Pittsburgh.

The university has investigated Alpha systems but hasn't installed any, mainly because of the price, he said.

"I have always been envious of Alpha performance, but it has been a little pricey for us in the past," Joyce said.

DIGITAL'S ALPHA 21164 PC CHIP

- Co-developed by Mitsubishi of Japan
- Available in 400-, 466- and 533-MHz speeds
- 8K bytes data cache
- 16K bytes instruction cache

Availability: Second quarter

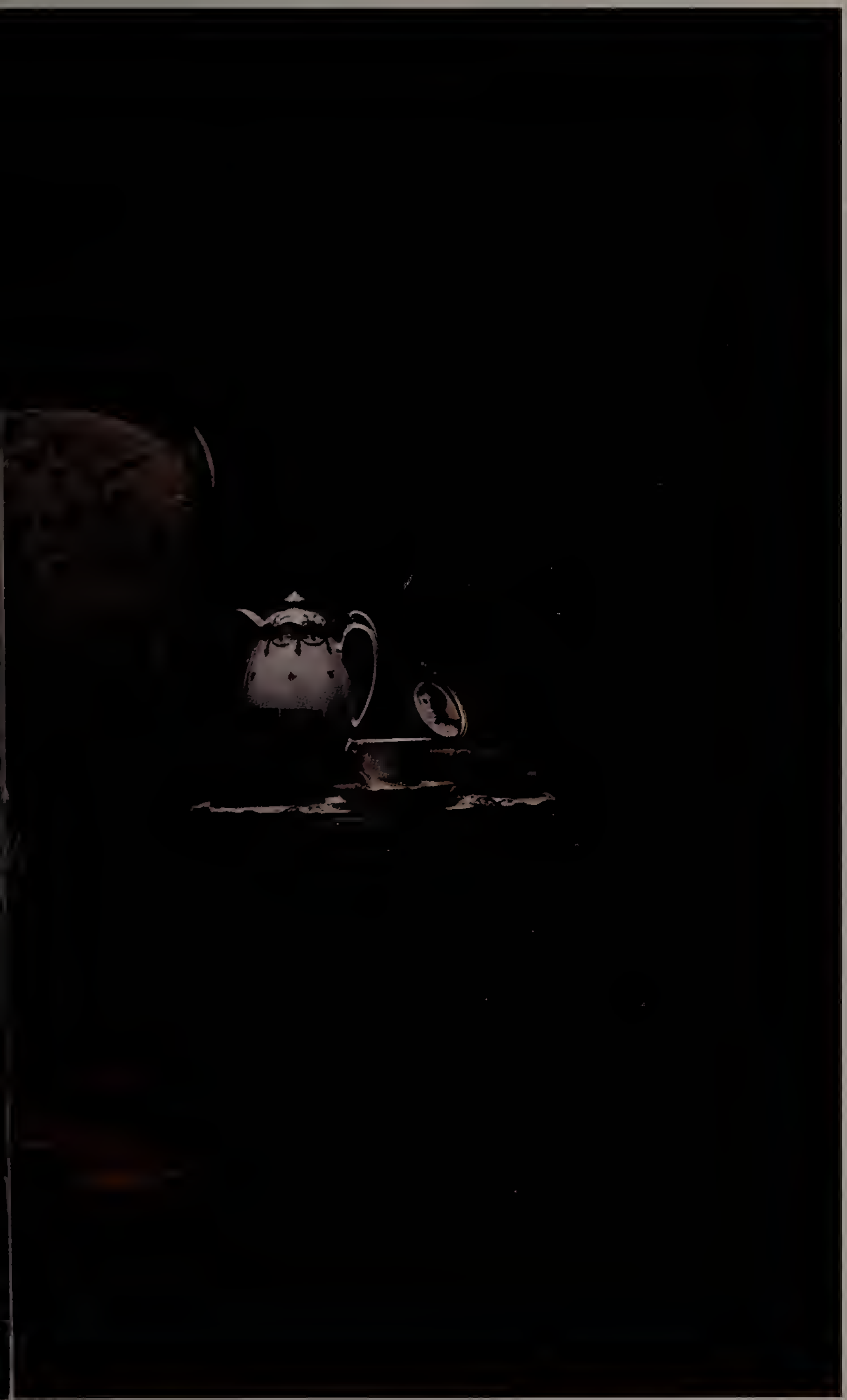
Price: $285 (400 MHz); $385 (466 MHz); $485 (533 MHz)

Digital's new chips and associated hardware, such as the core logic and motherboard, will let systems vendors build PCs that are closer to Intel prices. But not close enough, analysts said.

"When Digital started on this chip, they were targeting the mid-$2,000 market," which the volume sweet spot, said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

But in the past few months, several PC vendors have begun to offer Windows NT systems at even lower prices, analysts said. And Compaq Computer Corp. recently announced a sub-$1,000 system that is expected to have a ripple effect across the PC industry, analysts said.

A lack of native NT applications also could severely hamper acceptance of the new Alpha chips, analysts said. Digital claims there are about 1,800 32-bit NT applications available on Alpha; that figure is well below the 15,000 to 20,000 applications on Intel platforms. ☐



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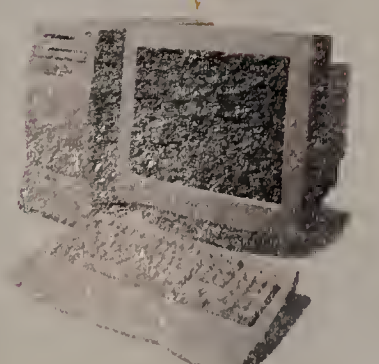

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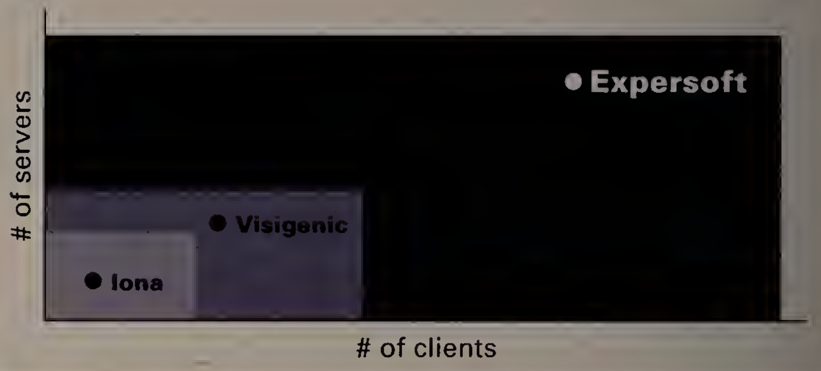

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Briefs

Baan juggles currency

Dutch software vendor The Baan Co. has enabled its application package to do financial accounting in several currencies at the same time. The announcement was made at CeBit, which was held this month in Hannover, Germany. The function will be available as a standard feature in Baan V, scheduled for prerelease this summer.

POS links to inventory

Rockville, Md.-based Manugistics, Inc. and Information Resources, Inc. (IRI) will create a software package that integrates IRI's point-of-sale (POS) scanner data information with Manugistics' inventory analysis software. The system would let users link the back-end supply chain with the front-end demand chain. The software is aimed at the consumer packaged goods industry. The product is slated to ship this summer. Pricing isn't available.

Informix server retired

Informix Software, Inc. plans in the second half of the year to retire its OnLine Dynamic Server relational database after incorporating the upcoming Version 7.3 into its object-enabled Universal Server. But officials at Menlo Park, Calif.-based Informix said they will probably add a relational-only license for Universal Server so users who don't want the object pieces won't have to pay for the full database.

1996 worldwide database server and tools market

Oracle	36.8%
Informix	15.6%
Sybase	10.3%
Computer Associates	5.8%
Microsoft	5%
IBM	4%
Other	22.5%
Total revenue	**$4.54B**

Source: International Data Corp., Framingham, Mass.

At last, Microsoft opens up DCOM

By Sharon Gaudin

MICROSOFT CORP. is trying to reach the enterprise by moving its Windows-specific DCOM architecture onto other operating systems.

Microsoft's Distributed Component Object Model (DCOM) is object-oriented middleware technology that allows clients and servers in a distributed system to communicate with one another. It is a network-based offshoot of the company's Common Object Model, which links client programs to servers.

After long sticking to its Windows-only guns, Microsoft is pushing DCOM onto at least three other operating systems: Digital Equipment Corp.'s Digital Unix, Sun Microsystems, Inc.'s Solaris and Linux, a freeware Unix variant.

The Redmond, Wash.-based firm is working with German vendor Software AG to get DCOM to work on Digital Unix and Linux platforms; both versions are in beta. Software AG is developing a version for Solaris.

The move to open up DCOM to non-Windows operating systems comes at a time when Microsoft says it will link DCOM with the Common Object Request Broker Architecture (CORBA), an object-oriented middleware standard [CW, March 17].

Both efforts should offer relief to users who rely heavily on Microsoft desktops. But users and analysts said Microsoft is acting late.

David Strickland, a systems supervisor at financial investment firm A. G. Edwards &

DCOM, page 49

MICROSOFT'S DCOM MOVES

- Working with Software AG to put DCOM on Digital Unix, Linux and Sun Solaris
- Supporting HP's push to link DCOM with CORBA

Technologies fall in Apple restructuring

By Lisa Picarille

APPLE COMPUTER, INC. earlier this month scrapped a handful of software technologies, part of a wide-ranging restructuring designed to cut $400 million in operating expenses and restore the company to financial health.

Most users said they weren't surprised by the elimination of once high-profile projects: Cyberdog, a browser component designed to manage data from World Wide Web sites; OpenDoc, part of an effort with IBM and other companies to create a component architecture; and Open Transport, Apple's operating system-level networking architecture.

But users said they were irritated that Cupertino, Calif.-based Apple spent resources advocating those technologies in spite of low adoption in the market and now has changed its technology direction.

Apple also will stop working on its AppleScript Mac OS scripting language, a videoconferencing product called QuickTime Conferencing and a multimedia authoring package called Apple Media Tool.

Apple officials said the com-

Apple, page 49

KATHERINE LAMBERT

Aristotle Publishing's James Xu: "We're betting most of our computing resources on SQL Server"

Microsoft SQL Server gains in non-Unix world

By Craig Stedman

DATABASES

MICROSOFT CORP.'S SQL Server database has passed "Go" and collected more workloads at several early-adopter sites that are expanding their reliance on the Windows NT-based software.

Microsoft is expected to face challenges later this year when it tries to cozy up to corporate users that already run Unix applications on rival databases [CW, March 10]. But for some organizations that are growing up from the desktop or just starting to move processing off mainframes, the SQL Server/Windows NT combo gets the job done.

Low cost and ease of use were key reasons for choosing NT

Microsoft, page 49

SAP gives R/3 new API, eases modification

By Randy Weston

SAP AG continues to pry open its R/3 applications package. The latest move is the addition of a new application programming interface (API) designed to let users quickly modify business process flow within R/3.

SAP, a German software giant that has U.S. headquarters in Wayne, Pa., built R/3 as a three-tier architecture with a presentation layer, application layer and database layer. The new API, announced at CeBit this month in Hannover, Germany, brings to the surface the previously hidden internal programming interface of process control, which along with process logic makes up the application layer.

Process control is the flow of steps in a business process. Process logic is what needs to be done at each step of a business process.

With the new system, the process control segment is exposed as APIs so a user can customize it to fit individual business needs without changing any underlying process logic or data.

"It's the whole idea of open-

SAP, page 49

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Agenda

8:15	**Continental Breakfast**
8:50	**Opening Remarks**
9:00	**Data Mining Presentations - Retail Industry**
10:30	**Refreshment Break**
11:00	**Vendor Debate - Retail Industry**
12:00	**Close of Morning Session**
12:15	**Hot Buffet Lunch**
2:00	**Data Mining Presentations - Finance Industry**
3:30	**Refreshment Break**
4:00	**Vendor Debate - Finance Industry**
5:00	**Closing Remarks**

Data Mining Solutions exhibit area open for viewing of product demonstrations throughout the day during breakfast, scheduled breaks, lunch, and after closing remarks until 6:00 pm.

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FROM THE EDITORS OF
COMPUTERWORLD
VOLUME 2, NUMBER 2
MARCH 24, 1997

Intranets

A MONTHLY LOOK AT WEB DEVELOPMENTS BEHIND THE FIREWALL

WEBCASTING

Now Showing On the Company Channel

KEEPING STAFF AND BUSINESS PARTNERS UP TO DATE IS THE NEXT USE OF 'PUSH' TECHNOLOGY. THOUGH NOT QUITE READY FOR PRIME TIME, IT MAY JUST CHANGE THE WAY YOU MANAGE INFORMATION. BY TONY BAER

It beats endless web surfing. It ties up corporate networks and It helps organizations learn exactly what their staff, business partners, and
customers need to know. Within the past year, a new form of web interaction has emerged, where organizations actively distribute, or "push" information.

The Chicago Board of Trade was hot to reduce the crush of memos that typically go out to its 4,000 members. It was already using its Web site to publicly distribute commodity prices. So the idea of using the Web to improve routine communications was intuitive — if the trading organization could organize memos so members didn't have to search for the right one, says Bill Stewart, co-chairman of CBOT's Internet advisory committee.

Enter a new system that combines the automatic notification capability of electronic mail with the efficiency of broadcasting. The tool, Wayfarer Communications, Inc.'s Incisa, would automatically pop up a headline or alert icon whenever a new memo came through. CBOT is now conducting a pilot with that technology, though it hasn't yet decided whether or when to go beyond that.

Incisa is part of a growing band of tools that seek to leverage the blessings of the Web — good information, fast — and shield users from its curses — keyword searches that turn up 15,000 citations or visits to Web sites that haven't been updated since your last visit. It comes in various forms with various names — e.g., "push" technology, by which organizations distribute data to users' desktops; and channels, where a user maintains a stateless connection to a Web server and data streams onto his desktop.

It's coming to an intranet near you.

Continued from page 1

Though the products have just barely hit the market, companies are finding that server-centric versions of webcasters that allow firms to establish one connection over the Web and push the data around internally via the intranet, such as PointCast, Inc.'s new I-Server, conserve bandwidth and limit activity outside the firewall. The intranet offerings also establish a new and timely way to distribute internal information, from executive pronouncements to benefits changes and the latest sales numbers.

Of course, it's early yet, and there are more users conducting pilots than rolling out full implementations. Yet scalability and its associated costs are quickly emerging as a concern. Though Web server add-ons for intranet webcasting might average under $100 per user, hidden costs to network performance could force organizations into an unending spiral of costly network upgrades. At the Alameda Newspaper Group, for instance, the introduction of webcasting helped force a LAN upgrade to 100Base-T.

A lack of standards also muddies the adoption waters, as may the emerging sentiment that the big guns will one day incorporate the core technology into their products, turning today's technology vendors into providers solely of content (see story at right).

Finally, beyond the technical issues is the weight of adding yet another medium that, like a corporate Web site or intranet home page, needs to be managed, monitored and refreshed so employees pay attention to it. Without a publishing strategy, webcasting could become just another information source employees are too busy to consult, no matter how visibly it pops up on their computer screen.

Yet a host of companies are undaunted and are placing their webcasting bets.

American Management Systems, Inc., a global information technology consulting firm, believes webcasting can improve the firm's competitive edge. It's about to inaugurate a "Domino channel" throughout its 7,000-person organization using PointCast's I-Server, a server version of the popular PointCast news and information channel that allows organizations to both cache PointCast channels locally and produce their own channels for intranet distribution.

At American Management Systems, I-Server will supplement a Lotus Development Corp. Notes discussion database of best practices. Consultants will automatically be informed of innovations in their areas of interest. Employees have already used PointCast individually, so the company is optimistic about using the medium for internal use, says Janet McCabe, a vice president at the company. "We regard it as a very effective bulletin board, one that already has people's attention," she says.

AT&T Wireless uses a different product — Intermind Corp.'s Communicator — to broadcast three internal channels covering company announcements and new technical bulletin alerts. Those alerts go to product developers, both inside and outside the organization, via an external connection to the intranet. Webcasting, says Stacia Johnson, manager of the developer program, is all about efficiency. "It's a lot more efficient because you notify people as changes occur, not when they accumulate at the end of the month," she says.

The University of Pennsylvania's Wharton School is another user that's up and running. Its 5,000 students are the audience for its internally developed Java-based webcasting system, called Spike, which has channels that beam homework assignments and allow students to bid for courses, conduct library searches and find alumni, among other functions.

Created with Javascript, a manual and a text editor and scheduled to integrate PointCast in its next version, Spike supplements unconnected systems that, for

Calling for Consistency

While the Web was built on standards, webcasting (so far) hasn't been. That could ultimately pose conflicts for users if or when the many-vendored field consolidates or cedes major ground to Microsoft and Netscape Communications Corp.

Standards for webcasting would involve messaging and display technologies and how information is organized or indexed. While TCP/IP appears to be the de facto messaging protocol for all things Internet, for example, at least one company has developed an adaptation of TCP/IP for broadcasting, though it's far from universally used.

Tibco, a Reuters subsidiary, developed a protocol in the late 1980s for transmitting Wall Street stock quotes to securities firms. That technology, called The Information Bus (TIB), uses a patented, intelligent publish and subscribe method and subject-based addressing. In contrast to webcasters such as PointCast, Inc.'s PointCast, which sends out information whether people are tuning in to it or not, TIB doesn't publish anything if there are no subscribers.

TIB is now being submitted to Internet standards bodies. Vendors are beginning to support it: Cisco's router software, for example, will be able to translate Tibco's subject-based addressing data into smart routing. Oracle Corp., Informix Corp. and webcasters Intermind and Quintus are also adding TIB support.

Where displays are concerned, many of the major companies use their own display formats rather than common Web browsers. There are also no standards for prioritizing messages or specifying how often they are refreshed.

ILLUSTRATIONS BY ELLEN PROCHNIK

instance, required students to go to the library to look up books. Before, "we had a very rich technological environment, but it was based on the user going to wherever the system was," notes Gerry McCartney, Wharton chief information officer. Next year, the school's 65,000 alumni will gain lifetime access to Spike.

And in a setup that may portend intranet distribution of software updates, antiviral product maker McAffee, Inc. recently began using a BackWeb Technologies server to "push" updates of ViruScan to corporate intranet servers and consumers alike. (Once it gets to the server, ViruScan is distributed using McAffee's SaberLAN tool for automated software distribution.) Marimba, Inc.'s Castanet, which broadcasts Java applets, has also been designed for creating software update channels.

In any case, using webcasting for external vs. internal information isn't an either/or decision. Many organizations are discovering synergies between external content and company data.

At Houston Industries, a regional Texas utility, 10 I-Server channels supplement PointCast Network offerings so 5,000+ staffers can view The Weather Channel as well as the impact of climate conditions on daily power generation operations. "Our folks are especially interested in tracking The Weather Channel's hurricane tracking page," says Bob Bertrand, systems developer.

ON THE DOWNSIDE

Usage, of course, means network traffic, even if the vendors are quick to reassure that their broadcast method keeps the message small.

A typical PointCast news article, for instance, whether beamed from the source or circulated internally via I-Server, is just 2K to 3K bytes; a color weather map is 27K bytes. But multiply that by thousands of users, and what does that do to network traffic and performance levels? Ask companies whose employees embraced the original PointCast.

"As more and more people got the news on their desktops, [network traffic levels] began looking like a cancerous tumor," says Kevin Hamilton, online information manager for the Alameda Newspaper Group.

The Bay Area newspaper chain switched from PointCast to PointCast I-Server, upgraded its LANs to 100 bit/sec. Ethernet and placed the T1 wide-area network linking the six local sites inside the firewall.

More recently, it has replaced PointCast with the MSNBC news reader because the Microsoft Corp. channel requires less client software and fits more closely with the firm's long-term plans to implement Microsoft's Active Desktop, the next-generation Web client that comes with a browser, webcast channels and other plug-ins. (Since then, PointCast has signed an agreement with Microsoft to put its channel on Active Desktop.)

Other webcast content and tool providers have taken measures to soften their network impact:

- Wayfarer's and Intermind's strategy limits transmissions to either brief text messages or single HTML text pages. For the full document, a user can hotlink on the listed URL.
- Tibco, Inc. uses subject-based addressing, which ensures that messages are broadcast only if subscribers so request.
- Lanacom, Inc.'s Headliner Web site monitoring service checks for changes and dispatches brief alerts whenever they occur, rather than broadcasting whole documents.
- InCommon LLC uses caching features that store the Web page previously downloaded and pages hot-linked to it. That reduces traffic and download times.

Yet even these advances may not be enough. "Bandwidth is something that you must protect," says Kim Spenchian, vice president of infor-

Continued on next page

WHAT'S ONLINE

Push technology: How can it help you? Consultant Oliver Pflug hosts our online forum.

www.computerworld.com/intranets

The result is that users must bet on proprietary technology in an immature market. The Wharton School at the University of Pennsylvania preferred not to take such a gamble and built its own intranet webcast application. "The technology isn't stable enough," Chief Information Officer Gerry McCartney says.

But there are ways to hedge your bets, adds Jeff Weiss, director of engineering for Internet and new media at EDS. "To protect your intranet investment, organize a repository that can be scanned by a standard HTML search engine," he advises.

That would cover you if "push" technology becomes a commodity, as some analysts predict. "There will be near-term opportunities for midsize players who make it part of their value-added product, but ultimately, I expect the major players — Microsoft, Lotus and Netscape — will incorporate this technology as a building block," Meta Group analyst Stan Lepeak says. In fact, Microsoft and Netscape have already announced such intentions for their next-generation Web clients.

— TONY BAER

WEBCASTING

Continued from page 3

mation systems at Metro-Goldwyn-Mayer, Inc. "The class [of push technology] that's out there is not yet ready for prime time."

Not all users are concerned, though. "Capacity is not an issue for us," says AT&T Wireless' Johnson, whose service goes out to a few hundred users. "The chances that all of your users will access the same document at the same time is pretty low."

Beyond bandwidth and traffic issues, scaling up a webcasting program to tens of thousands of users across a global enterprise — something few, if any, companies have actually done, raises other management concerns.

Vendors recommend the installation of multiple servers; remote "proxies" that manage transmission to and from the server, gateway or client; subject-based addressing repositories; or intelligent agents that filter incoming material and determine whether anybody should receive it. Theoretically, distributed servers should work, but experts in the early days of client/server said distributed databases were supposed to work, too, and stories of how they didn't are now legend.

Only one vendor — Tibco — has actually addressed physical networking (see story page 2). The company's recent alliance with Cisco Systems, Inc. would extend Tibco's subject-based addressing capability to smart routers, with the result that messages would be directed only to those portions of the network where valid subscribers are.

Security for intranet webcasting, meanwhile, becomes an issue of internal system integrity for original content and of encryption, authentication and firewalls, where information is pushed or channels opened from intranets to those who access the system via a private piece of the Internet. Virus protection, of course, is needed for anything that comes in to the corporate system.

In many cases, webcasting vendors rely on the measures that the customer has implemented on its Web servers, E-mail and network operating systems.

"We leverage security, credentials and access control [already present] for each of our supported delivery methods," says Richard Schwartz, president of Diffusion, Inc., developer of IntraExpress, which broadcasts information using a roles-based end-user model

Continued on page 9

Bechtel Re-engineers Engineering

For Bechtel Corp., webcasting is much more business-critical and transparent than news headlines floating around a screen saver.

The San Francisco-based global construction company is starting to use webcasting's underlying technology to keep its engineering and project management documents updated.

Using Tibco's Enterprise Tool Kit as messaging middleware, Bechtel enterprise applications use a publish and subscribe model to communicate updates via an intranet. This capability, being added as new projects begin, is in use among a handful. Suppliers are also starting to link in via external connections to the intranet.

"The idea is to tightly integrate all our work processes," says John Jahraus, manager of corporate software development. He declined to discuss costs for the strategic project.

Bechtel chose Tibco's The Information Bus (TIB) middleware because when the project began three years ago, TIB was the most reliable game in town. The intranet model proved ideal because of the varied computer experience of Bechtel employees around the world and the firm's many remote locations.

The system is built on a Microsoft Windows NT server, which communicates with the Oracle Corp. database through Open Database Connectivity. It packs an object to be placed on TIB to be published to a subscribing application. The subscriber receives the object, unpacks it and updates the database at the other end.

"It provides a better use of bandwidth in some cases, especially if there are multiple users for an object that gets published," Jahraus says.

Jahraus learned two lessons from this project. First, as middleware, the project was complex. "You need serious software [and data modeling] engineers to do this kind of work," he says. Second, the goal of process improvement required significant thought on how people used information. "It's a much bigger issue than doing technical analysis of data flows," he adds.

— TONY BAER

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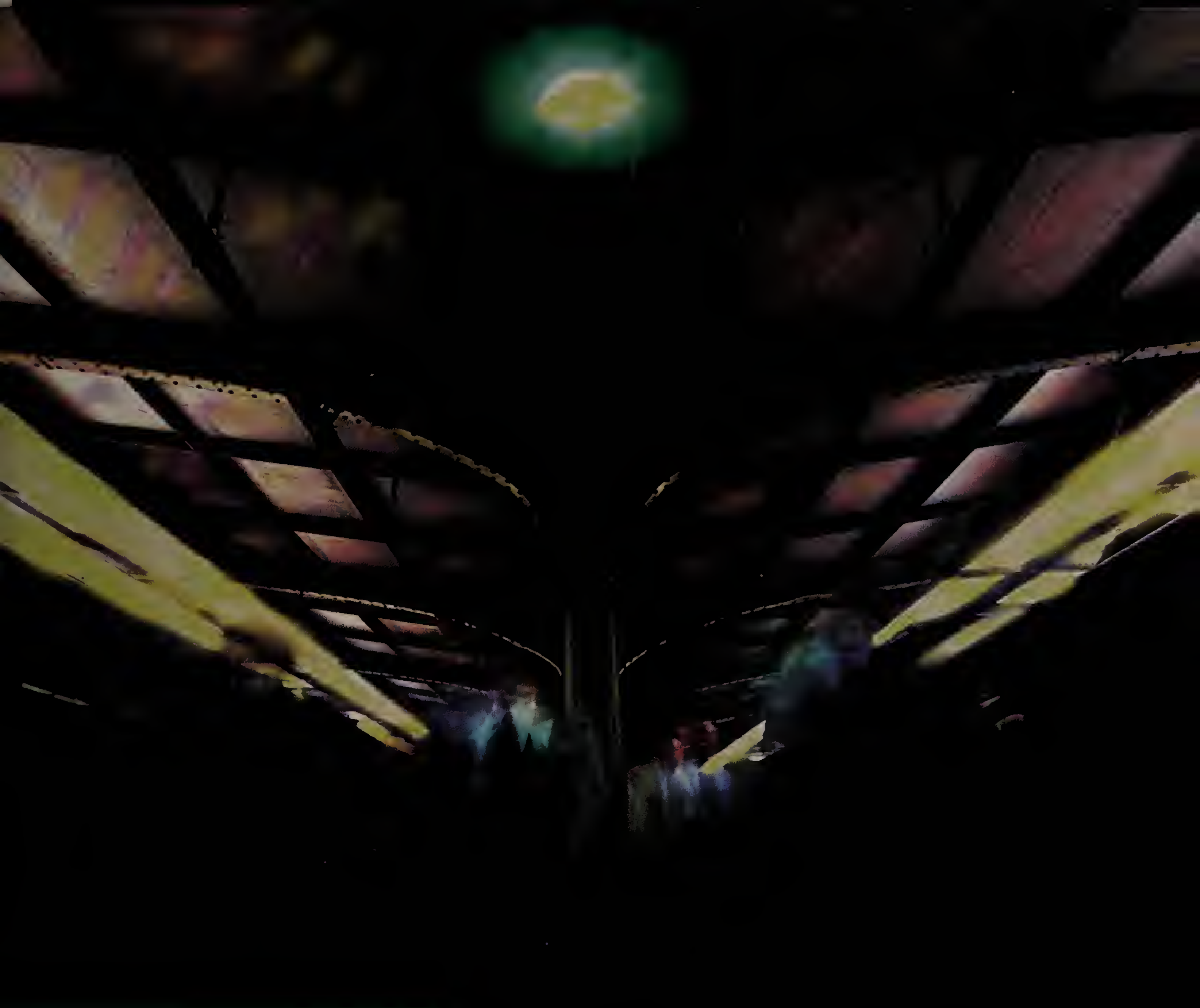
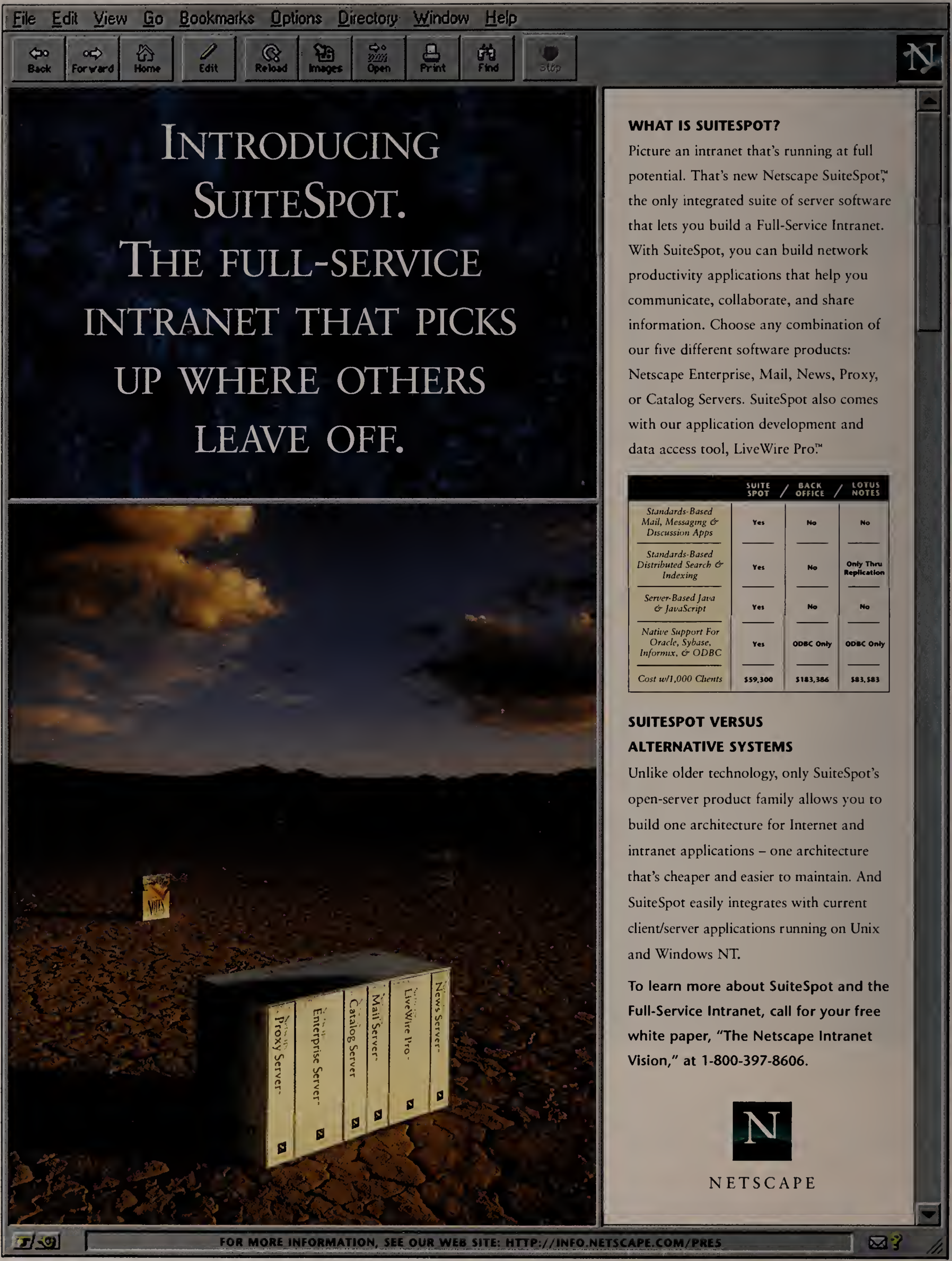
A Sampling of Webcasting Vendors

PRODUCT, VENDOR, COST	CONTENT SOURCES	PRODUCT REQUIREMENTS	OPERATION		SCAN AGENTS	PLATFORMS
			PUSH ONLY	PUSH/ PULL		
BackWeb Channel Server *BackWeb, San Jose, Calif.* CLIENT: Free SERVER: $10,500 + cost/ subscriber	■ External organizations ■ Enterprise/Workgroup ■ End user (with approval)	CLIENT: Required SERVER: Optional; required for intranets only	yes	yes	yes	CLIENT: Windows 95, NT, 3.1; Macintosh SERVER: Solaris, Windows NT
ChannelManager *DataChannel, Bellevue, Wash.* CLIENT: $6,900 (100 seats) SERVER: Bundled w/clients	■ External organizations ■ Enterprise/Workgroup ■ End user (with IT management approval)	CLIENT: Web browser helper application SERVER: RDBMS-based ChannelManager (user repository) and Web server helper app.	yes	yes	yes (via search engines)	CLIENT: Java-enabled browser SERVER: Java-enabled Web server
IntraExpress *Diffusion, Mountain View, Calif.* CLIENT: Bundled w/server SERVER: $35,000 (five sender clients, 100 recipient clients)	■ External organizations ■ Enterprise/Workgroup	CLIENT: Web browser or Windows client applet SERVER: Optional; required for intranets only	yes	yes	no	CLIENT: Java-enabled browser SERVER: NT Server
Downtown *inCommon, San Mateo, Calif.* CLIENT: Free SERVER: Base price + cost/subscriber	■ External organizations ■ Enterprise/Workgroup ■ End user (with limited functionality)	CLIENT: Required SERVER: Required for intranets only	yes	yes	yes	CLIENT: Windows 95, NT; Windows 3.1 by Q2 SERVER: Unix, Windows NT
Communicator *Intermind, Seattle* CLIENT: Free SERVER: $5,000/ Web server	■ External organizations (password and Intermind-assigned org. code required) ■ Enterprise/Workgroup ■ End user (distribution may be restricted by password)	CLIENT: Required SERVER: Not a server application. Publishing requires org. code assigned by Intermind.	yes (1-page HTML limit)	yes	no	CLIENT: Windows 95, NT, 3.1 (Macintosh "soon") SERVER: Any Web server
Castanet *Marimba, Palo Alto, Calif.* CLIENT: Free SERVER: $1,000-$25,000 (based on capacity)	■ External organizations ■ Enterprise/Workgroup ■ End user	CLIENT: Castanet Tuner SERVER: Castanet Transmitter	yes	yes	yes	CLIENT: Windows 95, NT; Solaris; Macintosh PowerPC SERVER: Solaris; Windows 95, NT
I-Server *PointCast, Cupertino, Calif.* CLIENT: Free SERVER: $995	■ External organizations ■ Enterprise/Workgroup	CLIENT: Required SERVER: Optional; required for intranets only	yes	no	no	CLIENT: Windows 95, 3.1; Macintosh PowerPC SERVER: Unix, Windows NT
ImpaQ *Quintus, Fremont, Calif.* CLIENT: $250 (enterprise licenses available) SERVER: $25,000	■ Enterprise/Workgroup	CLIENT: Web browser SERVER: ImpaQ Publisher	yes	yes	no	CLIENT: Java-enabled browser SERVER: Unix, Windows NT
Incisa *Wayfarer, Mountain View, Calif.* CLIENT: Free SERVER: $5,000 (first 100 concurrent users)	■ External organizations ■ Enterprise/Workgroup ■ End user	CLIENT: Required SERVER: Optional; required for intranets only	no	yes	yes	CLIENT: Windows 95, NT, 3.1 (Macintosh and Java "soon") SERVER: Windows NT (Unix "soon")





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	SUITE SPOT	BACK OFFICE	LOTUS NOTES
Standards-Based Mail, Messaging & Discussion Apps	Yes	No	No
Standards-Based Distributed Search & Indexing	Yes	No	Only Thru Replication
Server-Based Java & JavaScript	Yes	No	No
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Continued from page 4

similar to many workflow systems.

What's missing is support for data encryption. McAffee, which already has its own tool, NetCrypto, will incorporate it as part of its antiviral BackWeb channel. But few if any other webcasting vendors have signed on yet for McAffee's, or anybody's, data encryption technology. Admittedly, that remains an issue for the Internet community at large, which is still refining public key/private key technology.

INFORMATION COUNTS

Beyond technological concerns, of equal importance in the webcasting equation is the information this technology was created to efficiently disseminate. "The most complex portion is managing content," Houston Industries' Bertrand says.

And content is valuable only to the extent that it is used. Like TV and radio, Web broadcasts may go out, but that doesn't mean people are tuning in. A stale site, like a languishing Web page, can be worse than no site at all. "As soon as people see out-of-date material, they'll lose interest [in the channel]," says Jeff Weiss, director of engineering for Internet and new media at Electronic Data Systems Corp. in Plano, Texas.

At Houston Industries, experts in each department or area work to keep content fresh, reviewing items such as which operational data or employee policy manual revisions should go out over the intranet channels. Bertrand concedes this might be a good role for the corporate librarian. "I've got a call in to her right now," he notes.

In fact, the differences in information flow driven by webcasting could exact the same types of business process changes that organizations encountered with integrated client/server enterprise resource planning applications. "What you're doing is changing the way that an organization distributes information," CBOT's Stewart says. Cultural issues, not technology, will be the key hurdle to implementing webcasting within his organization, he notes.

But some tools could help webcasting realize its potential as an agent of change — literally. Several include or connect to agent technologies that scan Web sites for changes or track end-user preferences. Niche vendors such as Imana, Inc., a Bay Area start-up, are developing their own agents that webcast providers could use. They could work either in top-down fashion, determining which information to broadcast to which groups of people, or from the bottom up, sifting through incoming channels to determine which ones would be useful for a particular end user.

And, adds Mitch Hadley, strategic technology vice president at NationsBank, that's where the true value of webcasting may lie. Imagine the business benefits that stem from knowing exactly which features of which products your customers want to know about or which bits of information your staff or business partners need to perform their jobs.

"I don't think we understand where the starting value of this technology is yet," he says. "Maybe the strategic part is the agent and the push part is just the presentation mechanism."

Baer is a freelance writer in Bedford, Mass.

RESOURCES RESOURCES

ARTICLES ON PUSH TECHNOLOGY AND WEBCASTING:

- **BusinessWeek, Feb. 24, 1997, "A Way Out Of The Web Maze: It's called webcasting, and it promises to deliver the info you want, straight to your PC" (www.businessweek.com/1997/08/b35151.htm)**
- **Network World's IntraNet supplement, January 1997: "Pushing Back: Broadcast technology streamlines intranet traffic"**

TIPS

Traffic Patterns

How can you gauge the potential impact of webcasts on network traffic? Try examining a few key factors:

- **HOW ARE MESSAGES SENT?** Does the webcaster use a "publish and subscribe" model, where the message is broadcast only once, or does the webcast require individual transmissions to every subscriber? A single message uses less bandwidth.
- **WHAT'S BEING TRANSMITTED —** an entire file or a cryptic teaser or alert? Transmitting entire files is a one-way process, whereas the alert-and-response method requires two-way transmission. The user responds to the alert to download the full file. While alerts sound like a good bandwidth preservation measure, especially if large files are involved, what happens when everybody requests a 2M-byte animated image of the new company boss all at once?
- **IF THE WEBCAST SYSTEM USES** agent technology to automate updates or data retrieval, is the agent "smart" enough to distinguish trivial changes in content sources from important ones? Users want to know when the content of a Web page has changed, not the color. Like a band of Web search robots gone amok, an unending stream of nuisance alerts will not only bottleneck the pipeline but also cause "viewers" to tune out as well.

PROJECT: NATIONSBANK

NationsBank To Scale Up Push Pilot

By Steve Alexander

NationsBank in Charlotte, N.C., has begun a pilot project that uses push technology over an intranet to provide corporate messaging, news and stock prices. Initially available to about 50 employees, it will be tested during the next three months with up to 300 people. If the pilot is successful, the technology will be rolled out to the 23,000 of the bank's 80,000 employees who have desktop TCP/IP connections. Under the push technology plan, the information systems group will be responsible for the intranet's content as well as its technology. Mitch Hadley, a vice president in the strategic technology group, discussed the project.

WHAT'S ONLINE

For the full interview with Mitch Hadley and RealAudio clips, visit us online at
www.computerworld.com/intranets

WHAT THEY'RE DOING

NationsBank is using Wayfarer Communications, Inc.'s Incisa in the pilot; it will decide in 90 days whether to roll it out to the 23,000 employees. It has selected three intranet channels for the pilot (others are available): Reuters for news, PC Quotes for stock information and a corporate- or department-level communications channel. Users can subscribe to the channels they want or turn them off. Management lets employees make their own choices.

WHY THEY'RE DOING IT

Top management wanted to be able to push key internal news out to employees. Before, this was done manually by sending faxes to everyone, sending messages through the various (incompatible) E-mail systems and posting information on nonelectronic bulletin boards. These procedures have been augmented but not replaced by push technology.

HOW THEY'RE DOING IT

NationsBank has a dedicated NT server on which the Wayfarer server software resides. Users have Windows-based PCs and download the Wayfarer client via the intranet. The client software contains four Shockwave movies that add graphics animation. When a message arrives, text rolls across a 3-sq-in. window, along with instructions to click for more information. Users can minimize the application so it comes to the foreground only if someone sends an alert message.

On the server side, an administrator creates sets and subsets of users. The application doesn't require a database yet because the Reuters and PC Quotes information arrives in streams that aren't saved. Corporate messages also aren't saved during the pilot.

WHAT ABOUT BANDWIDTH?

When the pilot has 100 to 200 users, messages will be sent to about 50 people at a time to see what the impact is. If Wayfarer causes network problems, it will be turned off. IS would then have to make a business case for expanding the network to handle it.

COST AND ROI

The project has not been cost-justified yet. Server licenses will cost $5,000 per 100 users; the cost of the news services is unclear. Wayfarer hasn't charged anything for the pilot so far.

EASE OF IMPLEMENTATION

This is just NT server management.

HOW THEY WILL MEASURE SUCCESS

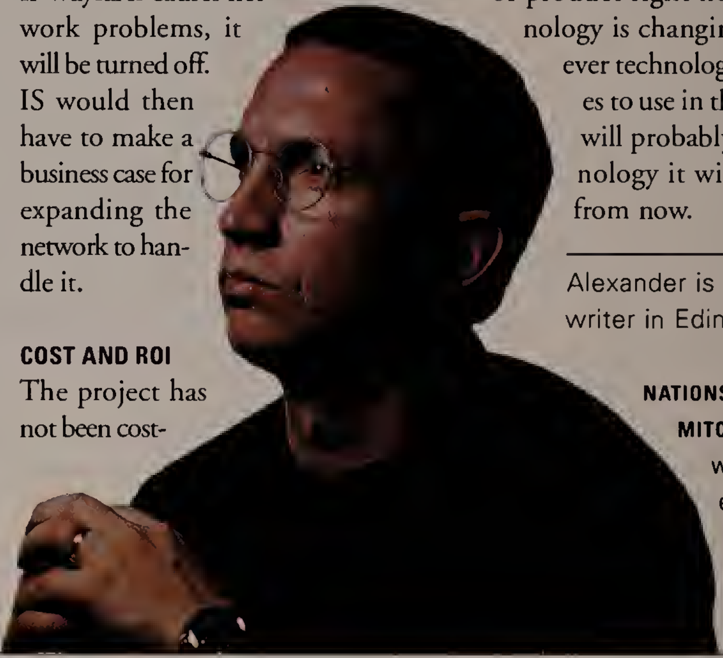
By people asking for and accepting the service. Monitoring server traffic to determine usage, while possible, isn't part of the pilot. Eventually, departments will be asked whether they are willing to pay for the service.

ADVICE

The challenge is to offer content of high enough quality that people will choose to leave the application running on their desktops all the time. "If we announce to everyone that there is a muffin sale tomorrow, they'll turn the thing off. So we need a policy in place about what to send to the group that includes everyone," Hadley says.

There's not a clear winner in this type of product right now, and the technology is changing rapidly. Whatever technology the bank chooses to use in the next six months will probably not be the technology it will be using a year from now.

Alexander is a freelance writer in Edina, Minn.



NATIONSBANK'S MITCH HADLEY: 'If we announce to everyone that there is a muffin sale tomorrow, they'll turn the thing off'

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PHOTO BY JERRY WOLFO

CONTINUED FROM PAGE 47

Sons, Inc. in St. Louis, said his computing environment includes several kinds of Unix machines.

Strickland said an architecture that could run across them all would be extremely beneficial, but he said he doesn't think his anti-Microsoft Unix people will accept it.

"It would be good if we could get our Unix people to use [DCOM]," he said. "I just don't think they will. [DCOM] won't be accepted in the Unix world because it's a Microsoft technology, and Unix people tend to loathe Microsoft."

Strickland said that animosity will give CORBA, which already runs cross-platform, an advantage at companies that rely on Unix systems.

Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass., said CORBA is already ahead of DCOM in the cross-platform race, and DCOM needs to make up some of that enough. In that sense, it's too little, too late," Boucher said.

"If Software AG and Microsoft can't deliver this [middleware] on as many platforms as CORBA has quickly, they will suffer. A distributed object solution available on three or four platforms is worthless," she said.

In the past, Microsoft officials asserted that Windows clients and Windows NT servers were all that users needed to run distributed applications. Now Microsoft officials acknowledge that isn't true.

"Customers are getting to the point where they are looking for technology and solutions that are open and that address all of their platform requirements," said Gary Voth, group product manager of platform marketing at Microsoft.

Voth said more operating systems for DCOM are planned, including Hewlett-Packard Co.'s HP-UX, Siemens-Nixdorf Informationssysteme AG's Sinix and IBM's MVS mainframes and AS/400 servers. □

Apple

CONTINUED FROM PAGE 47

pany will continue to support most of those technologies as part of the current Mac OS. But further enhancements, which would have been part of Apple's next-generation Rhapsody operating system, due in the middle of next year, won't happen.

Observers said Apple has finally accepted that some technologies, despite Apple's insistence on their importance, never gained mass acceptance.

TIME TO CUT LOSSES

"OpenDoc was important to Apple. It was one of the most important things they've ever done. But if after two years the market doesn't accept it, you have to cut your losses," said Ken Lim, editor of "CyberMedia 2001," an industry newsletter in Cupertino.

Mike Anderson, director of computer systems at TRW Systems Integration Group in Sunnyvale, Calif., said he "had great hopes for OpenDoc." TRW has more than 2,200 Macintoshes.

"We are standardized on Office [for the Macintosh] and hoped OpenDoc would get us out from being locked in to Microsoft as our primary vendor," said Anderson, who acknowledged that TRW won't be dramatically affected because it doesn't use OpenDoc technology. "We had the typical wait-and-see view."

Another user said Apple's inability to clearly point out the business value of some of its technology led to a lack of user support.

"If Apple can't articulate the benefits of a technology, then how am I supposed understood what OpenDoc and Cyberdog were, it was still unclear to me how they could benefit me over other solutions the industry was rallying around, like ActiveX and Java."

Some Macintosh users also weren't on board with Apple's plan, announced last summer, to release a new version of its operating system every six months. Apple officials now say that schedule was unrealistic, and the company instead plans to deliver a major operating system upgrade once per year.

"We don't want to deploy a new operating system every six months," said Stuart Greenfield, an analyst at the Texas controller's office in Austin, which has 1,200 Macintoshes. "By the time you get done deploying one upgrade, you have to start on the next one." □

SAP gives R/3 new API, eases modification

CONTINUED FROM PAGE 47

ness," said Dinesh Mangalick, manager of the SAP project at high-tech equipment manufacturer Varian Associates, Inc. in Palo Alto, Calif. "This is a very useful tool. It will enable you to customize the system without changing the system."

Judy Hodges, an analyst at International Data Corp. in Framingham, Mass., said this latest effort is in line with SAP's push to redesign R/3 to dispel its image as a difficult and highly inflexible software system.

"SAP is giving its customers more freedom," Hodges said. "[Users] can now optimize and modify SAP to fit their

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CONTINUED FROM PAGE 47

and SQL Server, but the Microsoft products have also come through on performance, those users said. The ability to deal with just one vendor for operating system and database software also simplifies support burdens, they added.

"Anything new we set up, we try to fit into [Microsoft's] suite" of BackOffice server software, said James Xu, vice president of technology at Aristotle Publishing, Inc. in Washington. "Having all the servers integrated into one package is much easier for us to manage."

For example, Xu said, he can use a single event viewer to monitor SQL Server and Aristotle's Internet and E-mail servers. Aristotle has used SQL Server since mid-1994 to store a 70G-byte voter information database that it sells to political candidates. It is tapping SQL Server for a new campaign management application due in the third quarter, Xu said.

SQL Server isn't without limitations, said Larry Joseph, a consultant who is building a Microsoft-based network for the Texas Department of Public Safety's traffic law enforcement division in Austin.

The database's marriage to Windows NT limits scaling to four to eight processors, Joseph said. The agency also had to write custom code to handle clustering tasks such as automatic failover between database servers, he added.

But that isn't stopping the traffic division from expanding its use of SQL Server beyond an 80G-byte data warehouse that stores accident reports and traffic tickets. On th
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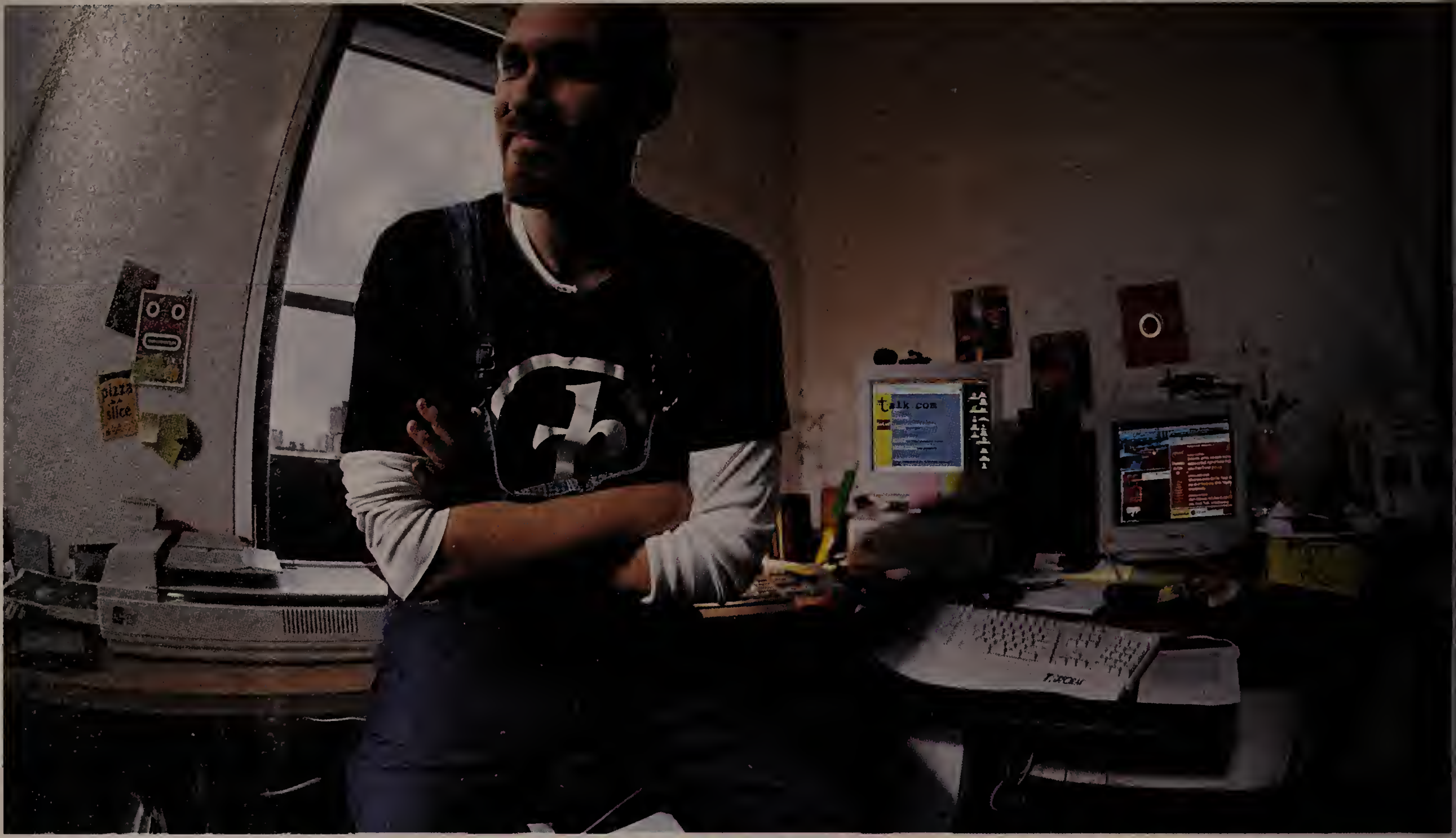

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Well, if your website's as hungry as most, feed it with Fujitsu's new ScanPartner® 600C color scanner. It's the easiest, quickest way to turn paper into digital content.

The ScanPartner 600C is the only desktop color scanner in its class that comes standard with an automatic document feeder (ADF). You simply load the ADF with up to 50 pages of color images and text. And it turns paper into Internet/Intranet-ready image files, at the rate of up to 15 pages per minute.

So as you can see, the ScanPartner 600C will save you a great deal of time. And at less than $2000, it will also save you a great deal of money. And if that's not enough, the ScanPartner 600C has a two business day replacement warranty. All part of Fujitsu's No Excuses™ service and support policy.

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Or call 800-626-4686, ext 1031.

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- *15 pages per minute throughput at 200 dpi line art mode*
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- *Flatbed with built-in 50-page ADF*
- *Supports Adobe PDF, JPEG, BMP, TIFF, PCX, DCX*
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FUJITSU

The Enterprise Network

LANs • WANs • Network Management

Briefs

Constant monitoring

Network managers now can hire a soothsayer to predict problems. NetOps Corp., a network consultancy in New Fairfield, Conn., recently launched a network analysis service that tracks thousands of internetworking devices and servers every second and correlates events to detect trends that could disrupt a network. Besides weekly reports with recommendations by NetOps engineers, the monitoring service augments immediate management and troubleshooting tools by supplying its current information. Pricing starts at about $50,000 per year.

Oracle upgrades office

Oracle Corp. in Redwood Shores, Calif., in May will ship Oracle Office 4.1, an upgrade of its messaging and groupware system that will include a workflow manager. Version 4.1 also will support Post Office Protocol 3 and include Oracle's Java word processing and presentation graphics applets, code-named Hat Trick, Oracle officials said.

56K in a PC

PCtel, Inc. in Milpitas, Calif., is shipping a modem chip that would give 56K bit/sec. capabilities to desktop PCs, notebook and handheld PCs. The PCT388 56K bit/sec. Host Signal Processing Modem chip will provide data/fax/voice functionality. The company said the modem chip consumes less than half the power of the typical modem, making it suitable for notebooks and handhelds.

U.S. SWITCHED ETHERNET REVENUE

1996	$4.72B
1997	$6.12B*
1998	$7.64B*
1999	$8.83B*
2000	$10.77B*

*Projected

Source: Dell'Oro Group, Portola Valley, Calif.

TAKING CENTER STAGE AT EMA '97

- Intranets vs. groupware
- Enterprise messaging
- Electronic commerce
- Directories and security
- Message-oriented middleware

Users talk E-mail strategies

By Barb Cole-Gomolski

E-MAIL IS PERVASIVE and mission-critical, but can companies use it to gain a competitive edge?

That is a question users hope to answer at next month's Electronic Messaging Association (EMA) annual conference.

Members said the focus of the EMA '97 Internet & Messaging for Business conference, to be held April 8 to 10 in Philadelphia, will be on how companies can use messaging networks for collaborative applications and electronic commerce.

"A big thrust will be leveraging the technologies associated with messaging to gain a strategic advantage," said Steve Mahaney, chairman of EMA and a messaging manager at a large New York-based pharmaceutical company. "Increasingly, this means integrating the once-disparate technologies like E-mail, directories, databases, [World Wide] Web [servers] and line-of-business applications," he said.

"It's a matter of survival for business today to be able to deploy electronic commerce applications on messaging networks," said Durwin Sharp, electronic commerce adviser at Exxon Corp. in Houston and a member of EMA's board.

Many companies have a clear idea about how they want to conduct electronic commerce, but deploying applications is still too difficult for most, Sharp

E-mail, page 54

• Users must turn on "hooks"

NT needs security vigil

By Laura DiDio

WHEN IT COMES to Windows NT security, what you don't know can hurt you and potentially turn your network into a hacker's playground.

A dozen users and analysts interviewed by *Computerworld* said Microsoft Corp.'s Windows NT, Releases 3.51 and 4.0, is an inherently secure operating system that is as good, if not better, than competing platforms.

But they said security gaps occur when network administrators don't understand the ins and outs of the operating system and fail to properly implement Windows NT security rights.

Failure to implement security within Windows NT leaves gaps.

Users and analysts said much of the confusion arises from the relative newness of the operating system and the fact that Windows NT domains can be daunting to configure.

"Windows NT is very secure. It gives us enough flexibility to communicate internally but still lock out potential intruders. But it's equally true that you have to know what you're doing," said Jeff Dazell, LAN services administrator at Dana Corp., a $7 billion automotive parts manufacturer in Toledo, Ohio.

Failure to properly implement the security facilities within Windows NT could have potentially disastrous consequences, Dazell said. They range from uploading a virus that could corrupt databases and files to downing the server and the network, bringing all work to a halt.

Ron Milione, chief technologist at Systron, Inc., a New York

Holes in NT, page 57

The Novell and HP alliance calls for HP to bundle Novell's LDAP-Directory Services on Unix-based HP 9000 enterprise servers. That will provide the following:

- A unified directory structure
- Global access to network resources
- Single log-on to all file servers and resources
- Support for the X.500 wide-area naming service
- Support for the Lightweight Directory Access Protocol Version 2
- C-2 level security for authentication

HP to add NDS to 9000s

▸ *Single-server product integrates Internet, network applications*

By Laura DiDio

HEWLETT-PACKARD CO. recently inked a deal that calls for the company to become the first RISC vendor to bundle Novell, Inc.'s LDAP-enabled Novell Directory Services (NDS) with its HP 9000 servers and workstations.

Orem, Utah-based Novell has licensed NDS, free of royalties, to HP to embed a single-server version of the directory service into all HP-UX Unix operating systems and platforms. The single-server NDS product supports the Lightweight Directory Access Protocol (LDAP), which integrates Internet and network applications. It is expected to be available in limited quantities from HP this summer.

HP is trying to accommodate its entire base of Fortune 500 accounts by integrating its products with Novell's NetWare/IntranetWare and Microsoft Corp.'s Windows NT. These agreements are part of HP's recently announced Colliance program, which works to ease coexistence of its high-end Unix servers and HP OpenView systems management with Windows NT and NetWare/IntranetWare, said David Birnbaum, HP's Colliance program manag-

HP, page 54

SWITCHING

ATM is alive and well in campus backbones

By Bob Wallace

ALTHOUGH Asynchronous Transfer Mode (ATM) has been thought dead more times than Dracula, some users say they need the high-speed switching technology for building and campus backbone networks.

That was underscored last week as Xylan Corp. in Calabasas, Calif., and Hewlett-Packard Co. in Palo Alto, Calif., announced ATM switch add-ons. They were developed largely through alliances with ATM market leaders: Xylan with IBM in Armonk, N.Y., and HP with Fore Systems, Inc. in Warrendale, Pa. (see chart, page 54).

Xylan detailed an ATM switch engine that will enable its OmniSwitch to anchor higher-speed backbone nets.

HP outlined plans for a device that will let users link a key HP switch to ATM backbone networks.

"We need ATM's capacity to support computer-based training and videoconferencing for a new complex that's nearing completion," said Bill Dilworth, a network design analyst at Lockheed Martin, Inc. in Valley

ATM, page 54

Plan new
New From:
COMPUTERWORLD

SHORTS

AssetView links to SMS

Hewlett-Packard Co. has significantly expanded the scope of its enterprise asset-management software. HP AssetView Version 2.2 offers a link to Microsoft Corp.'s System Management Server (SMS). PC configuration information gathered by SMS can be transferred directly to the AssetView database so managers can build more complete reports about installed systems.

ATM in the sky

Comsat Corp. in Bethesda, Md., next week will launch a satellite-based Asynchronous Transfer Mode (ATM) service that will let information systems managers extend high-speed pipes, ranging from fractional T1 to 45M bit/sec., to remote sites.

Solution City

In a bid to ensure compatibility among myriad networking hardware and software products, Novell, Inc. and 18 vendor partners have initiated a new joint testing and marketing program called Solution City (www.novell.com/partner/scity). The program aims to help users cut down on excess support time.

E-mail strategies take center stage

CONTINUED FROM PAGE 51

said. "There are all sorts of security ramifications and several competing security standards," he said.

Users have traditionally come together at EMA meetings to determine which proprietary messaging standards they would continue to use.

But Internet protocols became the preferred building blocks of messaging systems, letting companies focus on extending messaging systems to support more applications, users and EMA officials said.

"At last year's conference, the Internet was the big deal," said Paul Moniz, vice president of technology at EMA. "For many companies, [Internet-based] messaging technology is now in place, and users are looking to leverage it," he said.

Moniz said global directories also will get big play at the show. The EMA will host Directory Challenge '97, a demonstration of applications from 18 vendors designed to show how companies can build a directory to link public and private directories using the X.500 directory specification. Access to the X.500 directory applications will come through the Internet's Lightweight Directory Access Protocol.

The convergence of electronic-mail networks and corporate intranets also will be apparent at the show, said Nina Burns, president of Creative Networks, Inc., a research firm in Palo Alto, Calif. "In most companies a common [messaging] infrastructure is developing that will support E-mail, electronic commerce, collaboration and voice," Burns said.

OTHER HIGHLIGHTS

The EMA will showcase some of its own efforts to simplify the process of running multiple applications on messaging networks. It will demonstrate its Voice Profile for Internet Mail (VPIM) specification, which spells out how voice-mail messages can be sent between disparate messaging systems over the Internet. Products supporting VPIM are expected to roll out in about six months. They can reduce administrative overhead by letting users maintain one messaging system to handle both voice and E-mail.

Also at the show, Frontec AMT, Inc. in Stamford, Conn., will announce two new components of its AMTrix Intelligent Messaging Engine. The components, Notify and Compare, alert managers via E-mail, pager, fax or electronic data interchange when critical exceptions take place in their operational systems. □

ATM alive and well

CONTINUED FROM PAGE 51

Forge, Pa.

"In this case, we're looking for 622M bit/sec. for the $1.5 million building backbone network to shoulder these applications," Dilworth said. The training will be transmitted from a local college over a fiber link to the new facility.

Dilworth is evaluating ATM switches from Xylan; 3Com Corp. in Santa Clara, Calif.; Cabletron Systems, Inc. in Rochester, N.H.; Optical Data Systems Corp. in Richardson, Texas; and Fore Systems.

1996 WORLDWIDE SWITCHED ATM MARKET

Fore	27%
IBM	14.9%
Cisco	14.6%
Bay	12.9%
3Com	7.1%
Newbridge	4.6%
Others	18.9%

Total revenue: $470.9 million

Source: Dell'Oro Group, Portola Valley, Calif.

ADD-ON INCLUDED

Xylan wouldn't be in the running if it hadn't developed an ATM scheme that includes an add-on 2.4G bit/sec. switching card for its OmniSwitch LAN switch, along with a special server developed by IBM. The Xylan box can be equipped to provide 13.2G bit/sec. of ATM switching horsepower.

ATM has taken a beating in the past year or so, primarily because vendors were late in delivering the products they hyped. ATM to the desktop is viewed as overkill and has been relegated to a niche market, analysts agreed. But ATM has fared well in backbone networks.

Steve Vollmer said he agrees with HP's strategy of partnering with other vendors to enhance its product line rather than developing improvements internally.

"They need to keep up with users' needs, and teaming with vendors that are major players in their respective markets is a great way to do it," said Vollmer, director of information systems at New York-New York Hotel & Casino in Las Vegas, a large HP customer. He said the approach often delivers add-ons faster than internal development.

"I'd like to continue to see HP take this approach," he said.

Under the HP/Fore agreement, Fore will develop a 155M bit/sec. ATM uplink module that will enable users with HP's AdvanceStack Switch 2000 workgroup switches to connect to fiber-based ATM backbone networks. The single-slot module will ship later this year. It will cost $8,995. □

HP to add NDS to its Unix servers

CONTINUED FROM PAGE 51

er. HP had treated NT and NetWare as mutually exclusive, rival platforms, Birnbaum said.

Users and analysts liked the moves toward integration but said they won't have any discernible impact on short-term plans.

"It's nice to see the vendors cooperating — especially when it comes to directory services, which are becoming more crucial every day," said Mark Cooper, a financial systems analyst at Playtex Apparel, Inc. in Dover, Del., which has NetWare and HP-UX systems. "But I'm not going to get excited until I see that it's real. We'll wait to see what develops and follow the adoption curve once we determine how it fits in to our environment," Cooper said.

ANOTHER LICENSE

As part of its pact with Novell, HP also licensed Novell's ScalePack software, which will let the single-server version work on a multiserver network and turn on key networking features. ScalePack incorporates an add-on directory-to-directory replication and synchronization feature that will be embedded in the operating system.

HP hasn't set pricing for the bundled LDAP-enabled version of NDS on the HP 9000 system or the ScalePack.

Peter ffoulkes, an analyst at Dataquest in San Jose, Calif. said that in the long term, HP's partnerships with Microsoft and Novell will let the company deliver a more unified strategy, product set and support service to their customers.

"HP has now adopted a 'buy not build' philosophy that calls for them to partner wherever they can to deliver a soup-to-nuts integrated computing environment in which HP-UX, Windows NT and NetWare will all plug and play together," ffoulkes said. □

NEW PRODUCTS

BGS SYSTEMS, INC. has announced Best/1 Performance Assurance for SAP AG R/3, a performance and capacity management tool.

According to the Waltham, Mass., company, the software was designed to manage performance and capacity for application models such as sales and distribution, human resources, production planning and materials management.

Pricing starts at less than $50,000.

BGS Systems
(617) 891-0000
www.bgs.com

HIARC, INC. has announced HIARC Gemini, software to ensure that a live twin of critical data is maintained on a network for immediate access and recovery. According to the Cedar Rapids, Iowa, company, the data in the HIARC Gemini repository could have been updated as recently as five minutes ago. The software writes its data and backups in nonproprietary format so data can be accessed even if HIARC Gemini isn't present. Pricing starts at $12,000.

HIARC
(319) 366-3789
www.hiarc.com

Sooner or later, you'll want to get this application →

Holes in NT may let in some hackers

CONTINUED FROM PAGE 51

systems integrator, concurred. If, for example, a network administrator isn't savvy enough to implement the security default parameters, internal and external hackers could get "carte blanche supervisory rights" to access, delete, write and execute other users' files that share the same Windows NT Domain directory. Milione said that has happened to some of his large customers.

TIPS FOR REDUCING THE CHANCES OF BEING HACKED

- Get a firewall
- Physically secure the Windows NT Server
- Rename the Administrator account using an alphanumeric name
- Set up an Administrator Decoy Account to divert intruders who create a fake Administrator account that has no rights
- Never run a Web server program or an FTP program on Windows NT Server
- Make sure that accounts lock out after five incorrect log-on attempts

Mark Minasi, president of Tech-Teach International, Inc. in Arlington, Va., advised businesses to start with the basics (see chart). That means restricting physical access to Windows NT.

"If you don't, any idiot can get their hands on simple programs that give them unauthorized access to the Windows NT File System drives," Minasi said.

COMMON MISTAKE

Minasi and Tom Sheldon, who wrote *The Windows NT Security Handbook*, said one of the most common and potentially damaging mistakes network managers make is to name their administrative accounts "Administrator."

That is usually the hacker's first point of attack because it has unlimited access privileges and can't be locked out.

Typically, a hacker knows the Administrator account name and will attempt to log on. That's what happened to one unsuspecting network manager at a Southwestern bank whose network was invaded by an employee. Fortunately, the manager noticed some unusual activity the first day and traced it before any damage was done.

"It was a wake-up call," said the administrator, who requested anonymity. "Only afterward did we realize, although Windows NT has some great security hooks, we had to turn them on."

OTHER ATTACK POINTS

Other potential points of attack in Windows NT occur in the default installation routine on Windows NT 3.51 and remote access facilities.

Windows NT 3.51 doesn't automatically disable the guest log-on feature upon installation. "So if the administrator didn't know about it, anyone could use guest rights to get into the clients and the file server," Dazell said. Microsoft has since corrected that in Windows NT 4.0.

"The security is there [within Windows NT]," Dazell said. "If you don't take the time to learn it and implement it, you have no one to blame but yourself." □

Other ways to hack NT

Tom Sheldon, author of *The Windows NT Security Handbook*, said even when users implement all the recommended security measures, experienced hackers still will find ways to circumvent NT's security.

For example, users who take the obvious step of renaming their Administrator accounts haven't completely closed that hole.

Determined hackers still might find an opening using the NBSTAT command, which can reveal the TCP/IP address of any computer the administrator is logged on to, he said. Hackers could then attack that address.

Another no-no for any organization serious about security is sticking with the DOS-based File Allocation Table (FAT), rather than migrating to Windows NTFS.

"Security under FAT is nonexistent because there's no way to set security permissions, so NTFS is definitely the way to go," Sheldon said.
— Laura DiDio

3Com adds Rmon to network cards

By Patrick Dryden

3COM CORP. is turning its network interface cards into network troubleshooting tools by adding Remote Monitor (Rmon) software.

Whether located on a shared or switched segment, these nodes can capture packets and gather error and utilization statistics according to the Rmon standard.

MORE EYES

Some 3Com users welcomed this alternative to stand-alone probes and modules embedded inside internetworking devices as a flexible way to gather Rmon data.

"This gives us eyes into all our segments, because we can't afford to buy a stand-alone probe for each one or to go out and move probes around hundreds of subnets," said Bob Napier, a network engineer at a Lockheed Martin Corp. site in Bethesda, Md.

Individual Rmon probes cost from $1,000 to $3,000, and modules for hubs and switches cost less.

3Com's adapters report the performance data to a storehouse called the Edge Monitor, which managers can access with a browser or from 3Com's Transcend Enterprise Manager console.

3Com's distributed Rmon approach "won't significantly alter the scope of monitoring," but it can simplify the deployment of network monitoring technology and the monitoring of switched connections, said John Morency, a principal at The Registry, Inc., a network consultancy in Newton, Mass.

> **"This gives us eyes into all our segments."**
> **– Bob Napier, Lockheed Martin**

As managers install more switches and faster Ethernet LANs, they will need the option of gathering performance data from client-side machines, according to officials at 3Com in Santa Clara, Calif. This option helps monitor multiple-switched connections simultaneously and capture packets at high speeds, they said.

3Com's PC-based Rmon coverage applies only to Ethernet connections, 3Com adapters and 32-bit Windows PCs.

By the end of the year, 3Com said it expects to support its Token Ring adapters and may also extend support to other vendors' Ethernet adapters and 16-bit Windows or DOS PCs.

Rmon-capable Smart Agent software must be installed on an adapter at a PC running Windows NT or Windows 95. The new agent and driver software comes with the Edge Monitor, which costs $1,495 and requires Windows NT. It can gather data from as many as 1,000 agents in a subnetwork.

Napier said he would upgrade selected stations and install Edge Monitor software "so we don't have to procure more probes."

But even though 3Com said gathering Rmon data adds only 4% to 6% of a load to a PC, Napier said, "we'll just have to watch that we don't impact the user." □

Microsoft kit aims to give network managers control

By Laura DiDio

MICROSOFT CORP. recently said it will ship its Zero Administration Kit for Windows NT Workstation 4.0 within 90 days.

The availability of the tool kit this spring will kick off the second phase of Microsoft's Zero Administration initiative, which was designed to drastically reduce the cost of ownership by simplifying management.

The Zero Administration Kit will let network administrators centrally configure end users' desktops and prohibit end users from changing the Windows NT Workstation system configurations.

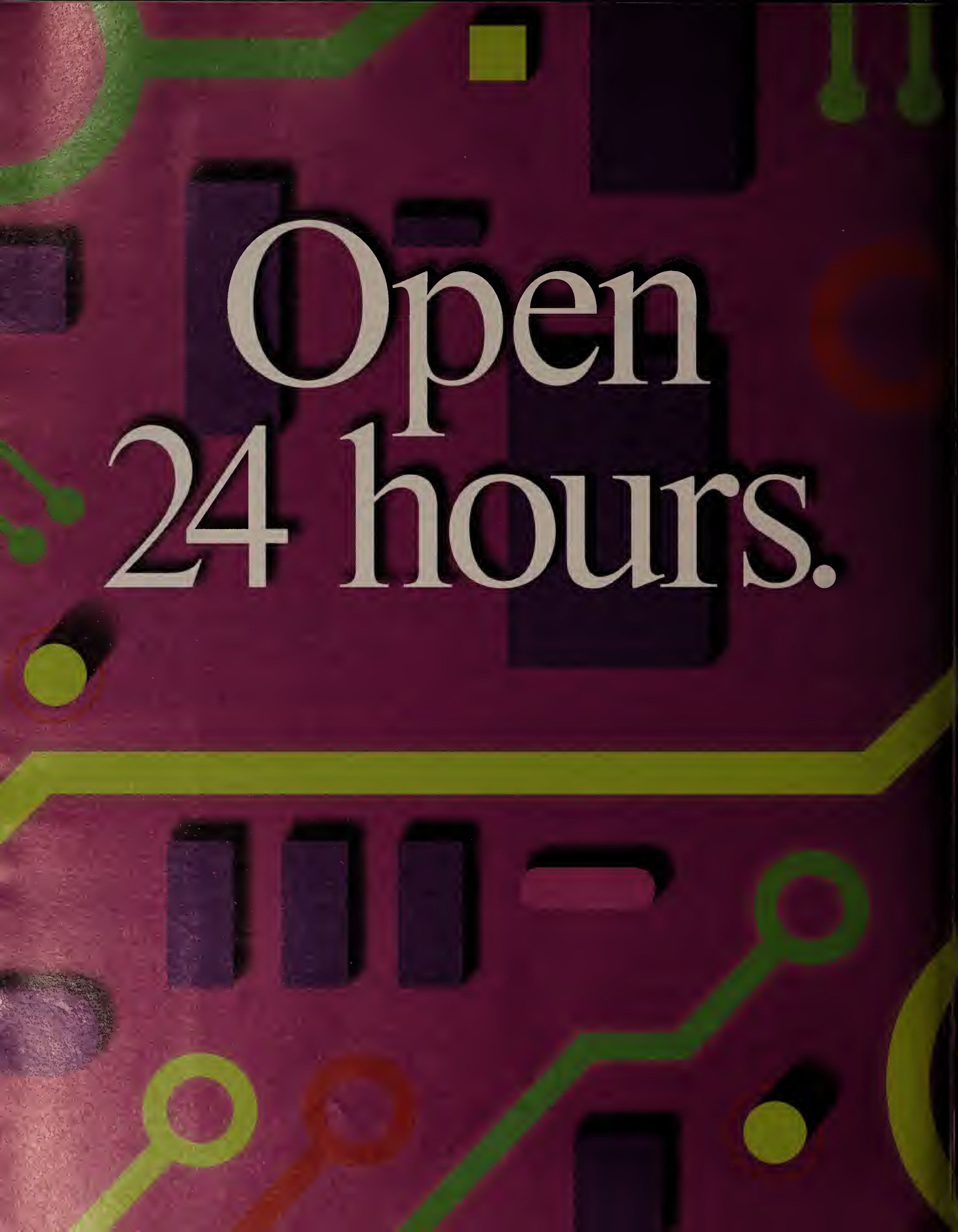
DREAM KIT

"It sounds like my dream come true if it cuts my costs and gives me more control over what applications my end users can install on their Windows NT desktops. I just hope it ships as promised," said Steve Sommer, vice president of information services at Hughes, Hubbard and Reed, Inc., a law firm in New York.

Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif., said Microsoft's Zero Administration effort was laudable but that Microsoft "has a lot on its plate right now. Zero Administration is an elusive target."

The Zero Administration Kit uses the operating system's inherent system policies and user profiles to give administrators more control to secure the Windows NT Workstation by limiting end users' ability to install software packages and customizing access rights and privileges. The kit can be installed by PC manufacturers preconfiguring new Windows NT Workstation machines. Companies with existing Windows NT 4.0 systems will have to reconfigure their systems to install the kit. □

> **The tool kit will kick off the second phase of Microsoft's Zero Administration initiative.**



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is ringing."

The Internet

The World Wide Web • Intranets • Online Services

Briefs

Percentage of respondents at 58 Internet service providers that said the following areas will impact their companies over the next two years:

ISDN	21%
Wireless technology	14%
Cable modem access	12%
Faster access	7%
Cable expansion	7%
Bandwidth	5%
Competitive offering	5%
ATM	5%
Don't know	22%

Source: Business Research Group, Newton, Mass.

Web guard dog

The company that makes one of the most popular Internet Hypertext Markup Language (HTML) editors is offering an access-control tool, designed to put a combination lock on World Wide Web pages. Sausage Software Ltd. in Doncaster, Australia, has introduced LockOut, a Java applet. Site administrators can use LockOut to require users who seek access to a site to click on a sequence of image files — in the correct order — to get in. The 32-bit server software runs on Windows NT or Windows 95. The client runs best in Microsoft Corp.'s Internet Explorer 3.0 or Netscape Communication Corp.'s Navigator 3.0. It costs $25 and is available immediately.

IBM hosts the 'net

At Internet World/Spring '97 two weeks ago, IBM announced plans to deliver a native OS/390 firewall product to go with the secure Web server and Internet utilities shipping with Version 3 of the OS/390 mainframe operating system. Also, Net.Commerce for OS/390, software that lets users quickly create Web sites hosted on the mainframe, will be available later this spring.

When users are customers

By Justin Hibbard

INFORMATION systems departments are in for an attitude adjustment.

As companies open their internal applications to help them do business across the Internet and extranets, IS departments are learning to support a new crop of users who want service with a smile.

Unlike internal users, who are hostages of IS, external customers demand immediate attention. And if they don't get it, they go elsewhere.

That has been the experience of IS managers such as Susan Goeldner, manager of Internet technologies at Federal Express Corp. in Memphis, which makes its package-tracking system available to customers over the Internet.

"[Customers] expect everything to work perfectly all the time, and they get very frustrated," Goeldner said.

She said employees who work the customer-service hot line at FedEx are trained to serve customers politely and promptly.

"An internal group might not get as quick a response as external customers," Goeldner said.

The pressure to provide top-notch customer support is backed by the threat that top management may outsource IS duties if support isn't up to snuff, said Tom Rhinelander, an analyst at Forrester Research, Inc. in Cambridge, Mass.

ALAN LEVENSON

DHL's Alan Boehme says IS must learn to anticipate the needs of external customers, sometimes years in advance

That's because applications offered to customers over the Internet and extranets are usually funded by business units. And if an IS department's poor support drives customers away, a business unit will quick-

Customers, page 64

Explorer 4 impresses

REVIEW ▸ *Microsoft update goes extra mile*

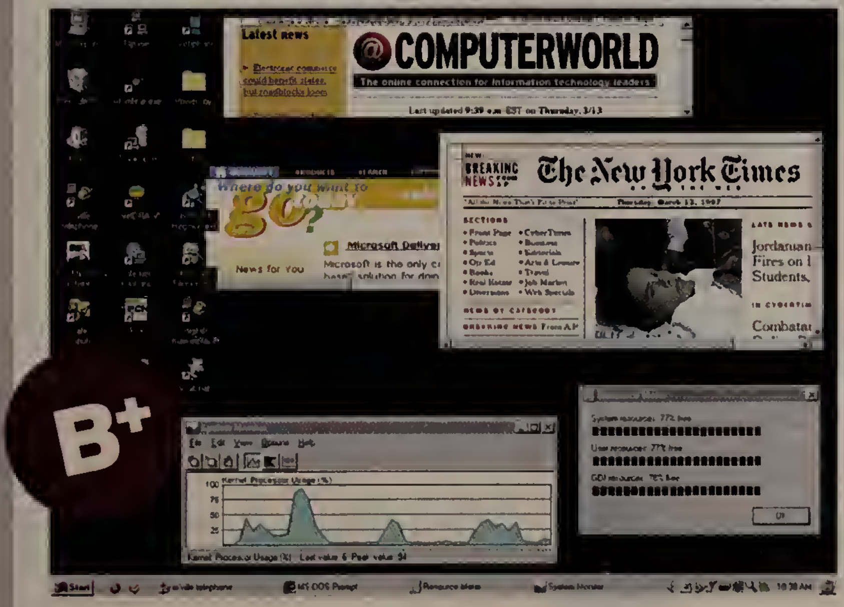
By Ross M. Greenberg

INTERNET EXPLORER 4.0 isn't simply an incremental update to Internet Explorer 3.0. It is as dramatic a change to your computing environment as was the change from DOS to Windows 3.1. Microsoft Corp.'s intent is to blur the line that separates your desktop from the World Wide Web. Tests with the Platform Preview release of Internet Explorer 4.0 show that, in large part, Microsoft seems to have succeeded, although this release has its share of glitches.

Microsoft delayed the Web availability of the Internet Explorer 4.0 beta to fully address recent security problems of Internet Explorer 3.0. I looked at the pre-beta release and found it impressive in scope.

The glitches that occurred in

Internet Explorer, page 65



Internet Explorer 4.0's Active Desktop's subscription service gives update capability to your desktop on a scheduled basis

ROGUE WARRIOR

Crash and learn

MITCH WAGNER

They download pre-beta software onto your network, bypass policies, use unauthorized products. They're your least favorite users. If a traveling user is a "road warrior," these people are . . . rogue warriors.

MEET MATTHEW MORAN, miracle worker and saint.

I know Matthew is a miracle worker because, as a systems specialist at Computerworld, Inc., he keeps my system up and running.

I know he's a saint because he hasn't killed me yet.

My problem — and Matt's — is that I like to mess around on the Internet. I'm a rogue warrior. I'm always hearing about some new piece of shareware or reading World Wide Web pages with Windows 95 tips and . . . well, I just click on this here and that there and change this setting and click "apply" and . . . um, now it's frozen.

And now it won't reboot.

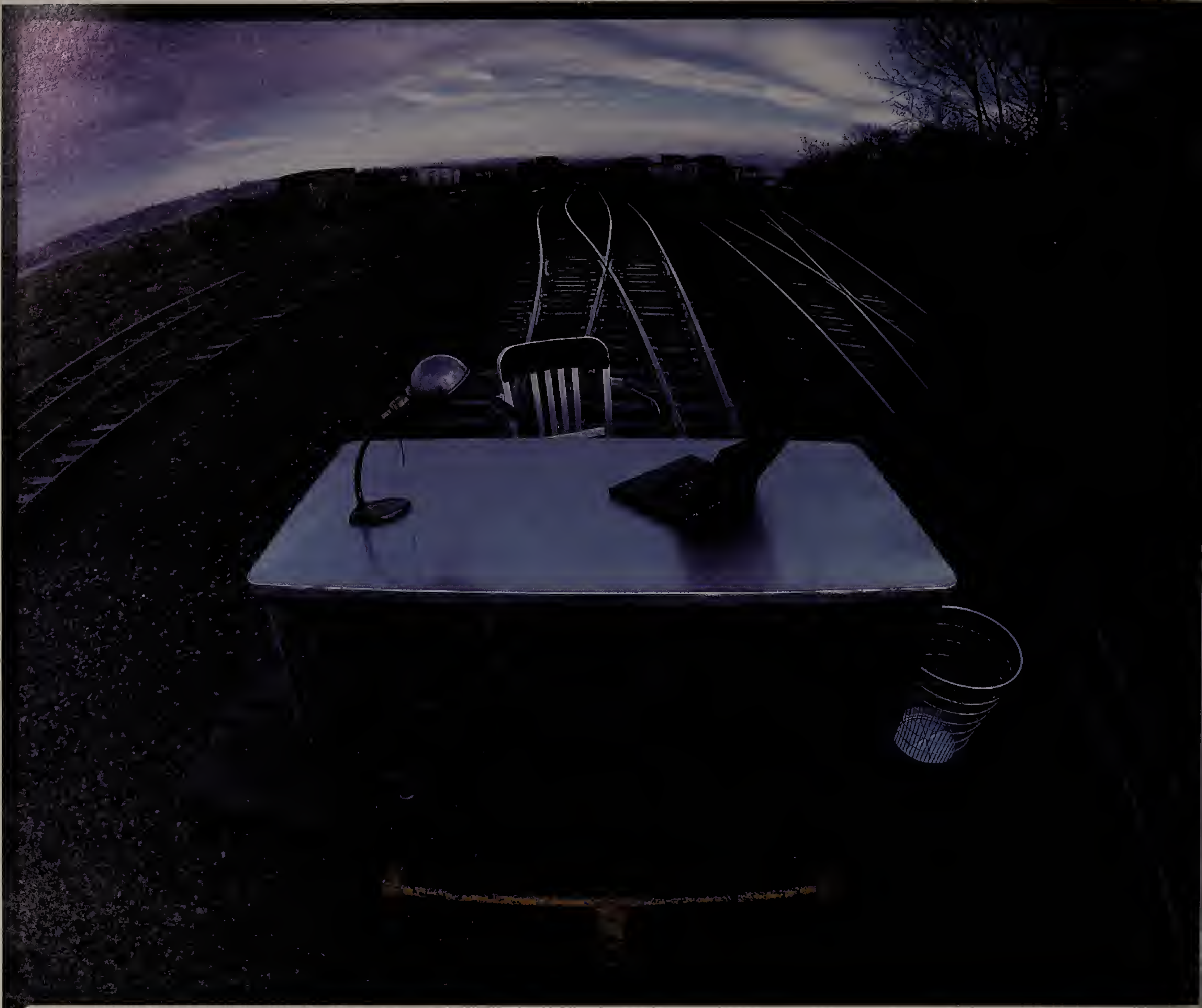
Matt? Matt? Got a minute there, buddy? Is that a picture of your little boy. Did I ever tell you what a cute kid he is? Wait until I tell you what I did. Gee, are you going to laugh! Matt? Matt? Can you put that down? Ouch, that hurts, Matt, cut it out, OK?

There are hundreds of thousands of us rogue warriors out there on the Internet — some of us may work at your company. Yeah, sure, we make your life more difficult at times, but on the whole, we're good for the company.

Matt agrees. Why don't you put down that blunt instrument and tell the people, Matt?

"You want the people who are actually working in the field to be motivated to find easier ways to do things," Moran says. "I don't have time to get everything — I can't read everything

Rogue warrior, page 64



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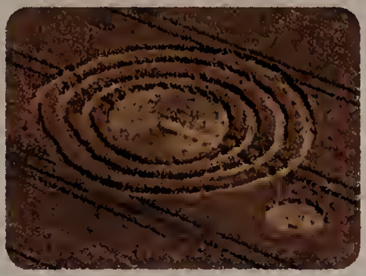
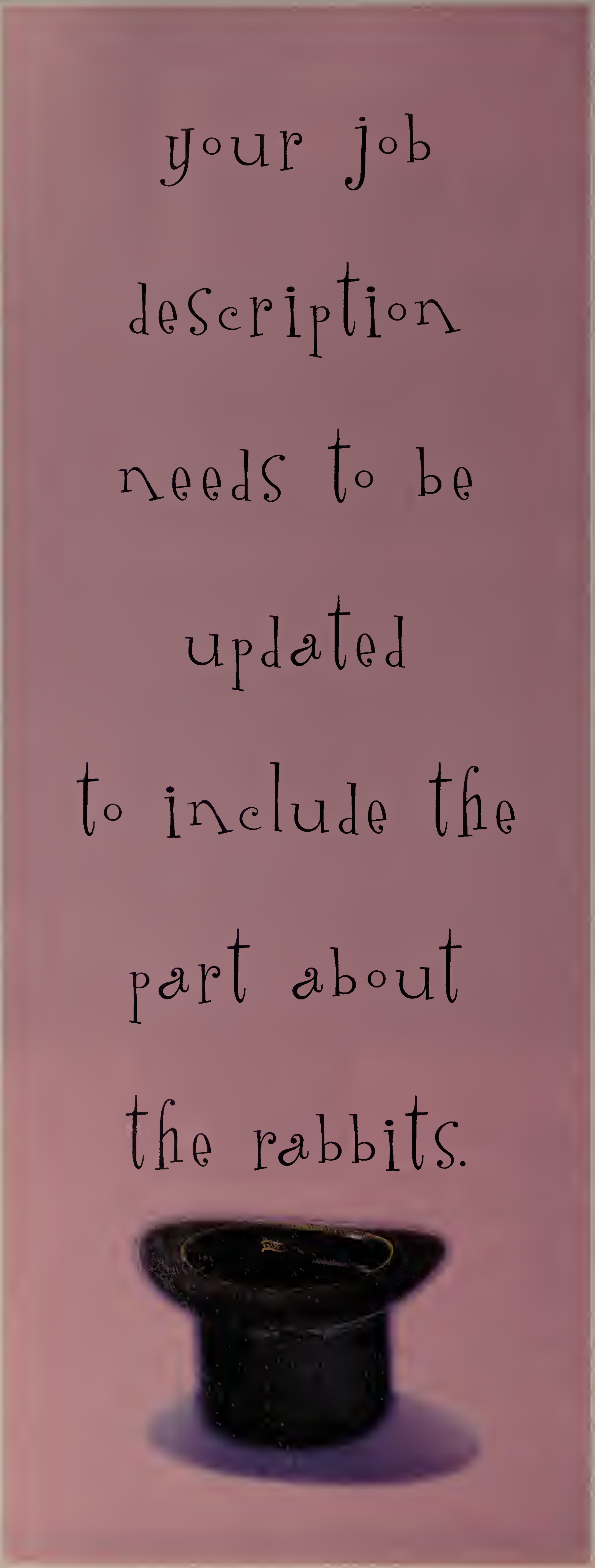


GROSS MARGIN►


your job description needs to be updated to include the part about the rabbits.

Customers demand service

CONTINUED FROM PAGE 61

ly send the work outside, Rhinelander said.

"You may have one opportunity with customers," he said. "You can't have the lax support that you might give your [internal] users."

LOOK AHEAD

IS departments must learn to anticipate the needs of external customers — sometimes years in advance, according to Alan Boehme, director of customer access and logistics at DHL Worldwide Express in Redwood City, Calif.

Boehme and his staff use focus groups and market research to determine the technology plans of corporate customers. Then they design applications that they believe will fit in to their customers' systems three years in the future.

"IS people need to understand what is the strategic need rather than responding to tactical needs," Boehme said.

Strategic planning includes building a support organization that identifies problems before they happen. That's why DHL, a FedEx competitor, gives help desk workers — who are the first to hear about new problems — influence over the application development process. Likewise, the company's developers serve as a second-tier support organization when problems escalate beyond the help desk.

In addition to working with customer support, IS departments must reach out to marketing departments, IS managers said.

FedEx is literally tearing down the walls between its IS and marketing departments. It recently broke ground on a five-building campus that will house the marketing and IS staffs that jointly develop the company's Internet-based electronic-commerce applications.

Relations between IS and marketing at FedEx haven't always gone smoothly, according to Goeldner. But the need to create a viable presence online has driven them together.

"As we've both learned how the other group learns and works and acts, we've learned how to work well together," Goeldner said. ☐

Rogue warrior

CONTINUED FROM PAGE 61

that's out there on the Internet."

In my Internet wanderings, I've found ways to improve my remote access and Web browsing capabilities. RAS+ 95 from Lamb Software, Inc. (www.lambsoftware.com), which turns Windows 95 dial-up networking from the kludge that it is into a reasonably useful utility. And I browse the Web faster with a shareware product called Opera, from Opera Software AS in Norway (opera.nta.no) than with either Microsoft Internet Explorer or Netscape Navigator.

Rogue warriors do more than find software. They can form an informal public relations and customer service department that represents the company on Usenet and the World Wide Web, answers customers' complaints and directs the dissatisfied to appropriate channels.

And they can serve as the front lines of user support as they answer questions from less-knowledgeable colleagues and reduce the workload on the help desk.

But there are problems: the crashed systems, the viruses and the networks that get clogged when the rogue warrior sends everyone in his workgroup a screen saver of Rudolph the Red-Nosed Reindeer going splat against a window. IS needs to channel all that good energy and put it to work by acting as teachers and guides.

PASS IT ON

Diane Silver, vice president of information strategy at American President Lines in Oakland, Calif., says staff should keep IS aware of every step and change they make to a system, and IS should offer training on what is on the Internet and appropriate online behavior. "Today's tools are going to need to be replaced tomorrow," she says. "If you find new tools that work, let IS know, and they might become a corporate standard."

Moran says the rogue warriors in the company are, ultimately, what keep the job satisfying. He likes seeing people learning more about computers and getting enthusiastic about how systems can make the job easier.

"Besides, it's more interesting than just hearing about the same problems all day — 'The printer is down.' 'It's out of paper,' " he says. ☐

Wagner, senior editor, Internet, means well — really, he does. His Internet address is mitch_wagner@cw.com.

SHORT

NT mail server

Hummingbird Communications Ltd. in North York, Ontario, is shipping Hummingbird Mail Server for Microsoft Windows NT. The server supports several Internet protocols, including Internet Mail Access Protocol 4. It also includes a point-and-click administrator's tool. Pricing starts at $995.

REVIEW▶ *Microsoft update is impressive*

Internet Explorer 4.0

CONTINUED FROM PAGE 61

my testing were both major and minor. For example, upon installation, dial-up networking suddenly quit working, and all desktop icons were put in alphabetical order. After several install/remove cycles and orderly shutdowns and power recycles, dial-up networking began to function again, and desktop icons went back to their original configuration for no apparent reason. That type of esoteric error is likely to be fixed.

SLOWING DOWN

More seriously, the replacement of the Windows 95 Explorer desktop with Internet Explorer 4.0's desktop seems to make things operate much more slowly. For example, bringing up Windows Explorer from the Start bar seemed to take longer. Although I didn't run formal tests in this area, Internet Explorer 4.0 felt noticeably slower than 3.0, particularly on Pentium-based PCs that run at 100-MHz and slower. Performance issues will have to be checked in subsequent releases.

REVIEW▶

Microsoft
Internet Explorer 4.0

MICROSOFT
Redmond, Wash.
(800) 426-9400 or (206) 882-8080
www.microsoft.com

PRO

Brings the Web to your desktop in a fully integrated, transparent way

CON

Seems slower than standard Windows 95, perhaps because the browser interface is taking on more functions

Also, from time to time, various general protection faults would bring the system to a screeching stop, usually during system shutdown. The most frustrating bug would crash the system — but only sometimes — if work had been done in a DOS window during the testing session.

The still-being-built Microsoft Network Viewer, which is based on Internet Explorer 3.0, didn't upgrade well in the Preview release. That made some portions of The Microsoft Network (MSN) inaccessible.

Internet Explorer 4.0 represents a major change. On today's Windows 95 system, Internet Explorer 3.0 runs as a separate application with no real communication with Windows 95. That isn't the case with Internet Explorer 4.0. In essence, your desktop becomes the viewing area of an underlying Internet Explorer. Integration, therefore, becomes complete. The desktop can run ActiveX controls; the background can be any Hypertext Markup Language (HTML) page. Your desktop becomes an extension of the Web.

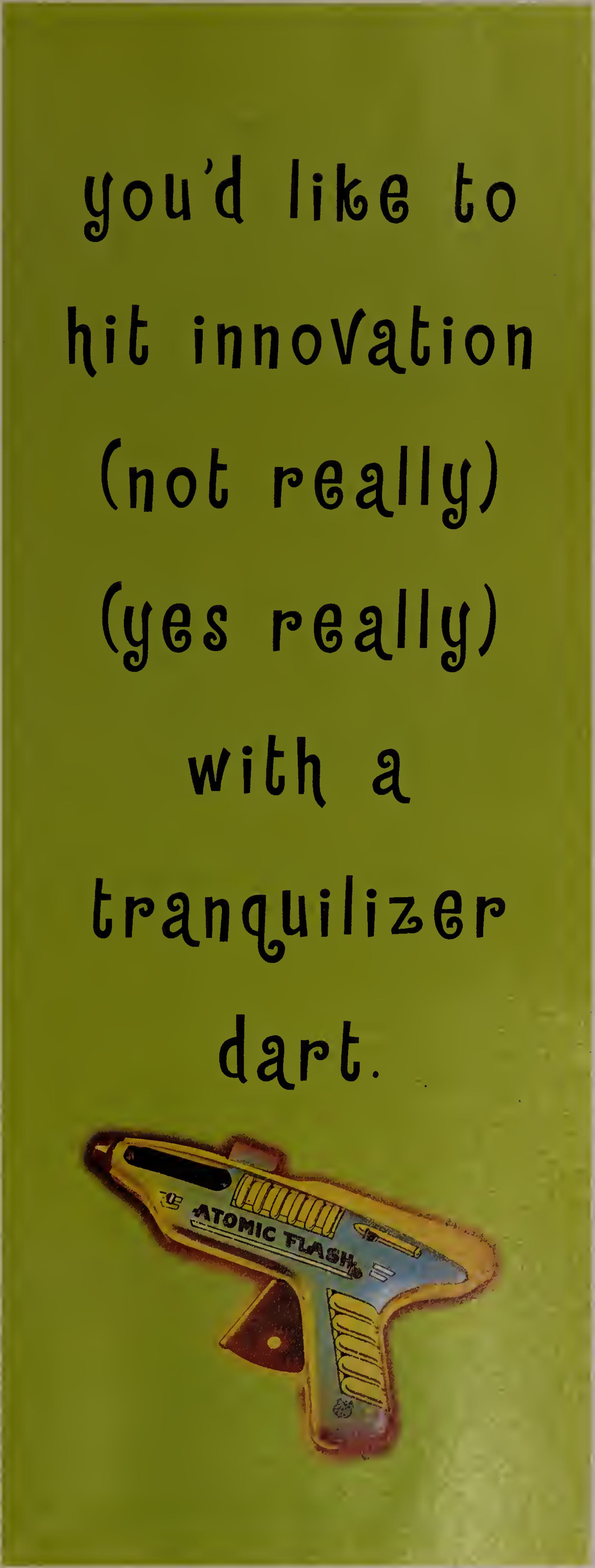
ENHANCEMENTS

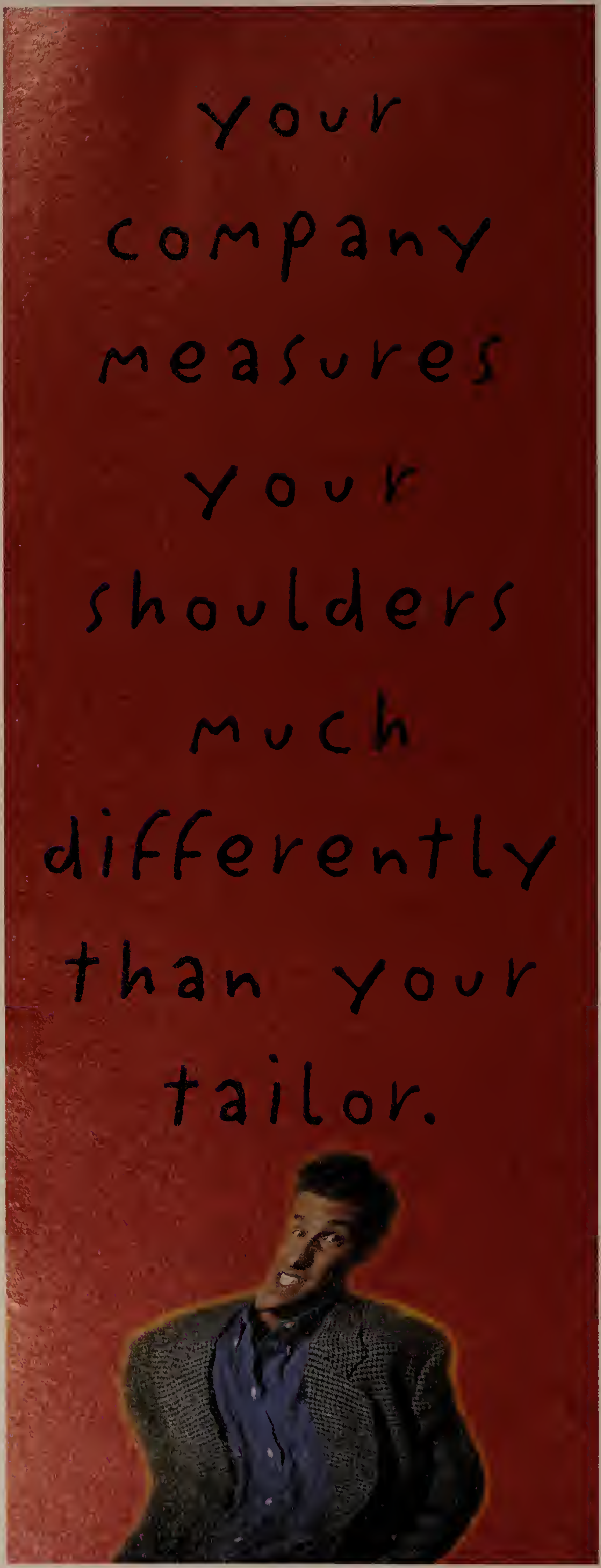
Some key changes in Internet Explorer 4.0 include the following:

- It allows for off-line Web browsing with "subscriptions" to favorite sites that it checks on a scheduled basis so you can peruse the updated material at your convenience. Combining this with Active Desktop means coming in each morning to integrated desktop displays of the latest edition of online newspapers or daily Web pages, for example.
- It is enhanced by dynamic HTML. Also known as HTML 3.2, the technology lets Web developers build pages that collect and interpret incoming data — such as mouse clicks — and respond to users' needs. For example, a stock quote page could "notice" a user looking at a specific company's quote and start searching for headline news relating to price fluctuations.
- A minor addition to Internet Explorer's ability to recognize and complete a uniform resource locator you have already visited when you start to type the address.
- It allows Web pages to include non-rectangular, transparent and/or windowless controls that can overlap, which makes it easier to build pages with multiple layers of graphics.
- It appears to use Windows 95 multitasking more effectively. It seems to download complex objects from the Web faster than Internet Explorer 3.0, although normal operations still seem slower. But I did no formal benchmarking for this.
- Microsoft seems to have made its Just-In-Time Java compiler substantially faster. Preliminary tests show an increase of between 10% and 30% in execution speed of some Java applets compared with Internet Explorer 3.0.
- It has more advanced settings and properties available to the user, including sophisticated cryptography and authentication controls based on RSA Data Security, Inc. and Verisoft certification and crypto-standards. Secure transactions that use Internet Explorer 4.0 can be transparent to the desktop user.

In summary, Internet Explorer 4.0 is worth a long, hard look by the more technically astute in your organization. In its Platform Preview release, it isn't ready for prime time, but it is closer than was expected for what is, essentially, a new platform. ☐

Greenberg is a program author and consultant in New Kingston, N.Y. He also is the sysop/host of MSN's Safe Computing Forum. He welcomes interesting Internet product information at greenber@ramnet.com.




your company measures your shoulders much differently than your tailor.

FRANKLY SPEAKING

Applets don't fall far from vendor tree

FRANK HAYES

HOW ABOUT A NICE, simple way to access your enterprise applications — by way of Java applets?

OK, here's a second option: How about an increasingly labor-intensive collection of proprietary front ends that make training a nightmare and integration of disparate systems nearly impossible?

No, you don't actually get to choose. They're the same thing.

Using Java applets to get access to your important systems is a great idea. You've probably got a collection of custom applications that run on PCs, are written in Visual Basic or PowerBuilder and serve as front ends to legacy applications. Or maybe your users are still pecking away on mainframe terminals.

Wouldn't it be great to put all those users on your intranet, set them up with Web browsers and let applets replace those big, hard-to-maintain front-end programs?

It's a seductive proposition — even leaving aside the fact that Java and the Web are a lot sexier these days than Visual Basic. With applets, IS won't have to install a new version on every user's PC each time it upgrades the front-end software. You get the industry's hottest technology and save time and money, too.

Best of all, you won't even need to write the applets yourself. IBM, SAP and other vendors soon will roll out Java applets designed to give users access to databases, transaction systems and enterprise applications.

And that's where your troubles begin. Because for every database, transaction system and enterprise application, you'll end up with another applet.

Want to check a customer's credit? That's one applet. Check an order's status? Another applet. Verify that an item is in stock? Still another applet.

Because all those applets may come from different vendors, each one might have a different look and feel — making them hard to learn and harder to use together.

And because individual applets can't communicate with one another, users will find themselves endlessly copying information by hand from one applet to another. If you want to change or add any functionality to those applets, you're out of luck unless the vendor deigns to offer you the Java source code. The result is higher training costs, less flexibility and more effort for users.

With a few more uses of Java such as these, IS shops could learn to hate Java almost as quickly as they've come to love it.

Can this great idea be saved? Sure. But you'll have to give up the idea that prepackaged Java applets from vendors will meet your business needs.

Instead, start lobbying vendors to hand over the Java code that will let your developers create their own connection applets. That's more work than using a vendor's canned front-end applet, but it's much more valuable to you and your users.

With that specialized Java code, IS developers can build their own front-end applets that automate data exchange between databases and applications, integrate business functionality and follow your organization's software standards.

Without that code — well, you've pretty much got to take whatever a vendor gives you.

And that's no choice at all. ☐

Hayes is Computerworld's *staff columnist. His Internet address is frank_hayes@cw.com.*

NEW PRODUCTS

MIDCORE SOFTWARE, INC. has announced MidPoint Gateway and MidPoint Companion for faster shared access to the Internet.

According to the Middlebury, Conn., vendor, the products use software to combine the throughput of modems on four telephone lines to give workgroups access to the World Wide Web and electronic mail.

Gateway is available for five, 20 or 50 users at prices that start at $24 per user. Companion, for one or two users, costs $129.

MidCore Software
(203) 577-5370
www.midcore.com

OUTREACH CORP. has announced Internet StoreManager 2.0 for building and managing virtual storefronts.

According to the Austin, Texas, company, Internet StoreManager 2.0 is PC-based and includes a graphical user interface that lets merchants enter product prices, descriptions, taxes and shipping options. It costs $2,000.

Outreach Corp.
(512) 832-0132
www.outreach.com

Canadian bank enables teller machines for Web

By Jaikumar Vijayan

THE CANADIAN Imperial Bank of Commerce (CIBC) recently demonstrated a prototype of a Web-enabled automated teller machine that promises to bring new levels of service and flexibility to standard teller machines.

But it will be a while before customers can access all the capabilities the systems will offer.

The machines will have World Wide Web browser interfaces but will use bank cards and passwords for security. They eventually will let users buy airline tickets, stocks and mutual funds.

"We want to give our customers far more choice in terms of financial and other services they can access" from a teller machine, said Joseph Heim, a spokesman for CIBC in Toronto. "The intranet offers us a great way to do so."

CIBC'S WEB-ENABLED TECHNOLOGY

Server: Tandem's Himalaya servers, Non-Stop SQL database and ITP Commerce Solution software

Client: Applied Communications Canada's Base 24 software, Netscape's Navigator Web browser and NCR's teller machines

CIBC is Canada's second-largest bank, with assets of $218 billion Canadian (about $156 billion U.S.) and a nationwide network of more than 3,100 automatic business machines (ABM), as teller machines are called in Canada.

An early version of the machines will offer customers at least a few new functions besides the usual ABM options. Pilot-testing will begin this summer, said Terry Davies, vice president of self-serve banking at CIBC.

Customers will be able to choose the color of the screen, the language in which to conduct transactions and the options the machine will present to them each time they use an ABM. For example, customers who consistently withdraw a fixed amount of cash can set their options so the machine will automatically ask them if they want to withdraw that amount each time, Davies said.

ADDED FUNCTIONS

The touch-screen Web ABMs eventually will be able to print stock certificates, money orders, insurance forms and savings bonds on micro-encoded secured paper. The ABMs also will let the bank simultaneously load new screen graphics, features and applications into each teller machine. Currently, almost all teller machines have to be upgraded individually.

"The question really is, 'How many features can we add to an ABM before it starts impeding the basic functions an ABM was put there for?'" Davies said. Too many features could create long usage times and long queues at the machines, he said.

"When you think about it, it is not such a big stretch after all," said James Greene, an analyst at Summit Strategies, Inc. in Boston. "There is useful information out there on the Web, which banks can easily patch on to their customers" via a teller machine. CIBC is building the system with technology from Tandem Computers Canada Ltd. and Applied Communications Canada, Inc. (see chart), both in Toronto. NCR Corp. in Dayton, Ohio, will supply the hardware for the machines. ☐

Bug may pester Shockwave users

By Sharon Machlis

A BUG IN Macromedia, Inc.'s Shockwave browser plug-in lets hackers write code that will read a user's electronic mail and upload messages stored on the user's system to an outside host.

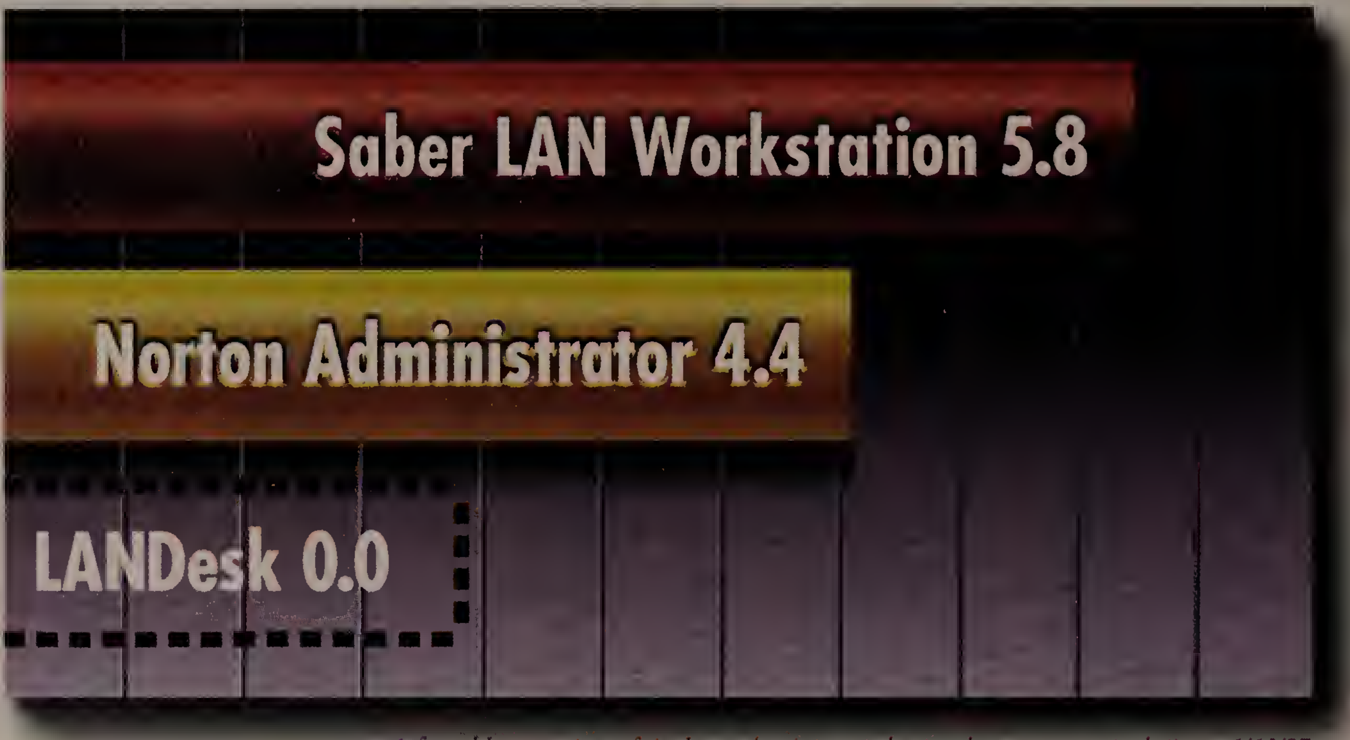
A more talented intruder could use a similar technique to get in to a corporate intranet server behind a firewall.

The security holes, first reported by David de Vitry at www.webcomics.com/shockwave/, could affect Netscape Communications Corp. Navigator users who run Windows 95, Windows NT or Mac OS. A Shockwave application designed to look like a movie can rifle through the Navigator E-mail directory and look at messages that users receive and the E-mail addresses of people who sent them, said de Vitry, an application development manager at Poppe Tyson Interactive in New York. Changing Navigator mail folders so they receive mail from directories other than the one named as a default might help protect user mail from such Shockwave applications, he said.

A more complicated hole to exploit, affecting Navigator and Microsoft Corp.'s Internet Explorer, would let Shockwave code enter a user's system and pull up the uniform resource locator for the in-house intranet server, he said.

Shockwave 6 fixes the problems, a Macromedia spokesman said. It can be downloaded from the San Francisco-based company's World Wide Web site at www.macromedia.com. ☐

WHY DID MCAFEE SCORE THE HIGHEST IN NT NETWORK MANAGEMENT?



InfoWorld comparison of single-vendor, integrated network management solutions–1/13/97

NATIVE ABILITY.

"(McAfee) brings some serious, integrated management muscle to both Windows NT and Netware environments."–LAN Times, 2/3/97

It was nothing, really. Because McAfee Saber LAN Workstation is pure NT. So now you can take complete control of all your networks, from NetWare to NT to UNIX.

Unlike Norton Administrator, which lacks Windows 95 and Windows NT client support, and Intel LANDesk, which doesn't natively support NT at all, Saber LAN provides fast, easy and complete NT management.

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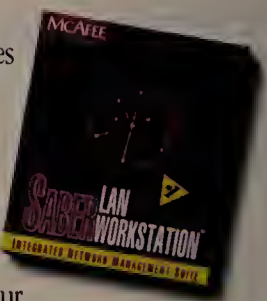

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Corporate Strategies

Case Studies ♦ Trends ♦ Outsourcing

Briefs

Best disaster practices

The best disaster recovery practices can be found at financial institutions and West Coast companies, according to Meta Group, Inc., a Stamford, Conn., market research firm. Meta Group has found that leading-edge companies typically spend 2% or more of their information technology budgets on disaster recovery, whereas laggards spend less than 0.5%. In addition, best practitioners conduct major program reviews every two to three years, with some reviews and tests conducted semiannually.

Nevada preps for 2000

The state of Nevada has signed MatriDigm Corp. in Denver to provide year 2000 conversion services. MatriDigm's Advanced Process 2000 is an automated factory conversion service that will be used to help the state government find problems, fix them and test the software. MatriDigm's year 2000 service was designed to automatically extract and describe the inputs, outputs, date fields and business rules of an application [CW, Jan. 6].

Mobil uses extranet

Proxicom in McLean, Va., has implemented an extranet application for Fairfax, Va.-based Mobil Corp. The application will let the petroleum giant's 300 lubricants distributors submit purchase orders to Mobil over the Internet via World Wide Web browsers. Proxicom's extranet application adheres to the X12 electronic data interchange standard.

Average cost to banks for retail banking transactions in the U.S.

Full-service teller	$1.07
Telephone	54¢
ATM	27¢
PC banking (third-party software)	1.5¢
Internet	1¢

urce: Booz, Allen & Hamilton, Inc., McLean, Va.

Lockheed trims help desks

"You can ... buy a common system, but getting people to use it is the hard part."

– MIKE MORA
LOCKHEED MARTIN

DIANE HUNTRESS

▸ *Centralized call centers a tough sell*

By Kim Girard

WHEN LOCKHEED Corp. merged with Martin Marietta Corp. two years ago, the $23 billion aerospace behemoth decided to consolidate both companies' help desks.

By whittling away 13 help desks and creating two client-support centers to serve the entire corporation, Bethesda, Md.-based Lockheed Martin Corp. expects to save $5.4 million over five years and has reduced its help desk staff from 79 to 54.

The consolidation increased productivity by 10% to 15%, according to Mike Mora, the Denver-based manager of Lockheed's client-support services. And the cost of an average inbound help desk call, which typically lasts four minutes, has remained under $10, Mora said.

NEW SYSTEM

Lockheed last year began to build a custom client-support system for 70,000 end users. The help desk system from Mountain View, Calif.-based Remedy Corp. and database servers from Sybase, Inc. in Emeryville, Calif., replaced balkanized help desks where employees tapped in to mainframe systems that didn't allow information sharing.

The system was designed to run on Windows, Macintosh

Lockheed, page 71

Fewer options ease PC buying

▸ *Research laboratory standardizes purchasing*

By Julia King

VARIETY MAY BE the spice of life, but it also can drive up procurement and hardware-support costs.

Just ask Lee Ann Dudney, a help desk project manager at Pacific Northwest National Laboratory (PNNL), which will save $1.2 million annually through a managed hardware program that offers users eight standard systems configurations.

In place at the Richland, Wash., laboratory for less than a year, the program has already won high praise from picky users who were accustomed to a wide selection of systems. In 1994, for example, the 2,000 PCs PNNL purchased included more than 400 configurations — all of which had to be supported by the help desk.

Purchasing, page 73

Year 2000 foresight pays off

By Thomas Hoffman

In 1998 and 1999, when thousands of his peers will have to give up their weekends and drag themselves into the office to oversee year 2000 conversion and testing projects, Larry Imes will be playing golf, gardening and videotaping his grandson.

The vice president of information systems at The Lafayette Life Insurance Co. can afford to kick back, he said, because he and his staff claim they solved their company's doomsday problem back in 1990.

That's when the $755 million insurer finished a three-year effort to consolidate its four IBM VM batch-oriented systems into an IBM DB2 relational database format. During the conversion, Imes and his staff began expanding two-digit date fields in the company's core administrative applications to four digits so that the insurer could forecast interest-rate calculations beyond the year 2000.

The year 2000 problem "didn't just fall out of the sky

Insurer, page 72

MOBILE COMPUTING

Automation boosts bank's bottom line

By Mindy Blodgett

BEFORE MIKE BRAY, senior loan officer at BankAmerica Corp.'s loan branch in Santa Monica, Calif., went mobile, he kept track of sales calls through a complicated system of scratch pads, Rolodex notes and 3-by-5 cards.

"I had a whole system — it was sticky notes up everywhere," Bray said.

But that was then. Now, he schedules his calls, tracks leads and follows his loan meetings via an IBM PC Co. ThinkPad laptop that runs Goldmine contact management software from Goldmine Software Corp. in Pacific Palisades, Calif.

"Now, every day I start out by checking the system to see what is on my schedule," Bray said. "It will fax for me, it will send mail, I can page people through it. ... It really does it all for me."

Sales contact software helped BankAmerica's Mike Bray increase his loan sales by 30%

VIRGINIA LEE HUNTER

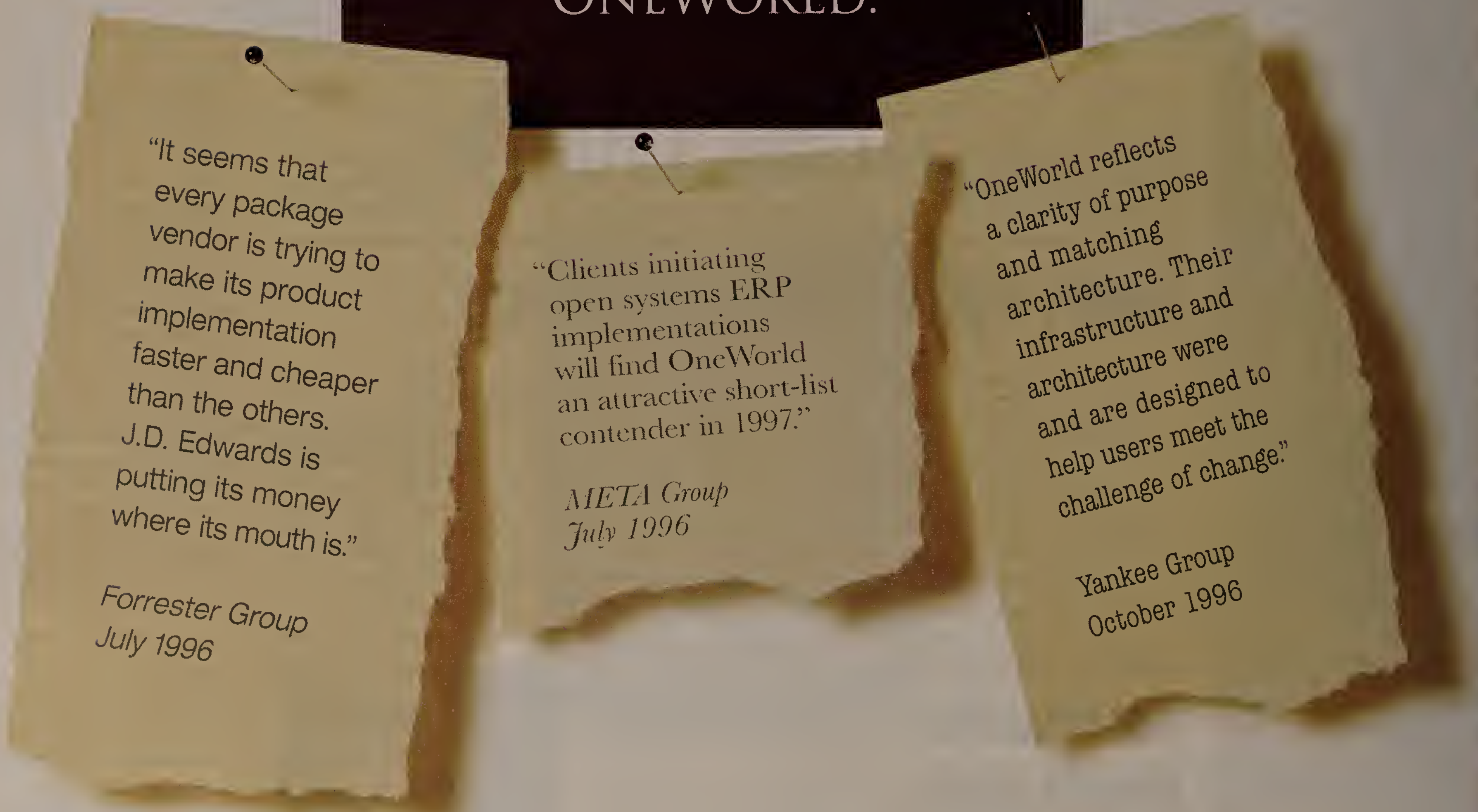
BankAmerica Mortgage, an operating company of BankAmerica in San Francisco, for the past year has been rolling out a sales force automation project that uses Goldmine. About 80% of the 1,500-member nationwide sales force is equipped with laptops that run the contact management software as well as mobile color printers.

About 18 months ago, before the full rollout, Bray and Tony Bardin, another senior loan officer at the Santa Monica branch, decided to experiment with Goldmine and other software. The two decided that Goldmine helped to increase the loan-origination volume and therefore the profits of the branch.

During trials at the branch, BankAmerica Mortgage was conducting a separate sales-force automation pilot.

"We went to them and said, 'Look at what this system has done for us,'" Bray said.

Automation, page 71



Customer service revamp also delivers benefits to FedEx help desk

By Kim Girard

FEDERAL EXPRESS CORP. is overhauling its help desk to benefit its employees and customers, giving them the option to use an intranet and an expanded database to search for answers to systems problems.

In May, the Memphis-based delivery giant will begin to install a customized version of Santa Clara, Calif.-based Vantive Corp.'s HelpDesk application that includes electronic mail, manuals and documents and web-enabled self-service options for internal use.

For now, help desk employees must tap information from a slow mainframe system or use manuals to answer questions. But the new client/server system, operating on Windows clients and Hewlett-Packard Co. Unix servers, will expand access to information, reduce costs and speed up the help desk process, said Bart Dahmer, senior manager of strategic systems and electronic support at FedEx.

The company isn't consolidating its help desks, but FedEx plans to offer access to database information managed by Vantive, Dahmer said. Users will be able to access the information on the intranet, both internally and externally, through a new graphical user interface.

Using the system, an employee can fill out a trouble ticket on a computer and send it to a help desk, requesting a call back. Those who want to solve their own problems can type a keyword into a web interface and access — from the database — a list of potential ways to solve a problem. The more key information plugged in, the more accurate the search. But Dahmer said self-help technologies are no replacement for telephone support.

"They complement it," he said. "Some individuals will be comfortable surfing to get help; others will always want to work on the phone. The growth of the Internet shows more and more people are getting comfortable."

FedEx plans to extend the system's capabilities to its external customers by the fall, eventually supporting 500,000 customers and 127,000 employees.

OUTSIDE CONNECTION

Externally, customers who use FedEx's PowerShip line of shipping and ordering automation products also will be connected to the company's help desk. A separate version of the Vantive system will enable those companies to tap in to part of FedEx's self-help database or call or E-mail for technical help.

"We know this will provide better service," Dahmer said. "We believe the system will reduce time it takes to provide answers to customers."

Although providing options to get help is important, only about 10% to 15% of corporate users typically are comfortable browsing for help themselves, said Carter Lusher, an analyst at Gartner Group, Inc. in Stamford, Conn.

But at a company the size of FedEx, if users can get help without speaking to a paid employee, big savings could result, he said. On average, use of corporate help desks cost $2,743 for each user per year.

"There's tremendous payback from automating" the help desk, Lusher said. "But it has to be part of an overall strategy that complements phone and E-mail. The easier it is to use, the more likely it is to be used."

Getting 10% to 15% of employees off the phone in favor of self-help would be a "dramatic" time- and cost-saver, Dahmer said. □

Lockheed

CONTINUED FROM PAGE 69

and Unix platforms.

Mora has no regrets about using Remedy. But he said the company should have paid a consultant an estimated $250,000 to develop the client/server system instead of using five full-time Lockheed developers to create the database.

With a consultant, the time needed to finish the job could have been cut from 18 months to three, Mora said. Although Lockheed's developers were committed to perfecting the tool — called Multiplatform Action Response System — they lacked the needed experience programming with the Remedy software. That often led to time-consuming trial-and-error program installations, Mora said.

"I still have nightmares about that," Mora said. "It was not worth it at all to do it internally. It cost way more than it should have."

Although outsourcing help desk services can save money, relatively few companies do it. Only 15% of companies outsource any help desk services, according to analysts at Gartner Group, Inc. in Stamford, Conn., Gartner predicted that number will grow to 40% by next year.

Throughout last year, Mora closed down a help desk every six to eight weeks until just two support centers remained. All calls are routed to the two centers, which are staffed by 54 "call analysts" — 31 in Denver and 23 in Orlando, Fla. Call analysts, who handle a total of 37,000 calls per month, ship questions they can't answer to one of the 1,300 technical people at specific Lockheed sites.

Selling the idea of a centralized help desk was the biggest challenge, Mora said. Managers at separate locations had their own ideas about how the help desk should work. They wanted the system installed at no additional cost to their departments, and they asked why they couldn't keep their own call center people locally. "You can go out and buy a common system, but getting people to use it is the hard part," Mora said.

EMPLOYEE DEMAND

But Tracey Mercer, project coordinator of client-support services at Lockheed in Denver, said employees she surveyed at various sites demanded a standardized system to track basic system problems, trends, problem analysis and escalating system problems.

With the new system, Mercer said, copies of all trouble tickets can be sent electronically from the service center to technical staff members, who are paged or sent electronic mail. The tickets are monitored by support center employees in real time. When a router or mainframe goes down, the system automatically notifies technical staff.

Mora said within several months he plans to make information available over the corporate intranet so employees can find answers to their own problems. He said he plans to hold focus groups with employees to discuss the value of using the World Wide Web. □

Automation boosts bank

CONTINUED FROM PAGE 69

Bray and Bardin didn't have only their word to show for the increased productivity.

From 1995 to 1996, their individual loan sales increased by 30% each to a combined $21.5 million. That put them in the bank's Platinum Club.

"Two loan officers from one branch had never made the Platinum Club before," Bray said.

Lawrence England, vice president of interactive marketing at BankAmerica Mortgage, said the company looked at many systems and took in to account Bray and Bardin's experiences when choosing a system.

The bank, which did more than $15 billion of business last year, also is considering adding wireless communications to the mix, England said.

He said representatives are encouraged to be on the road more often and to use the laptops and software for on-site loan approvals and information gathering.

George Kivel, a technology analyst at The Tower Group in Newton, Mass., said more and more banks are using sales force automation software to make operations more efficient and save time in the processing of loans.

"The key is to significantly change the flow of business, not just to automate the process," Kivel said.

"Done correctly, automation can lead to increased customer retention and efficiency, helping the bank to retain market share," he said.

Besides Goldmine, other vendors in the market include Saratoga Systems, Inc. in Campbell, Calif.; Aurum Software, Inc. in San Jose, Calif.; and Brock Control Systems, Inc. in Atlanta. □

SHORTS

Disaster relief for traders

Telehouse International Corporation of America in New York has created a new disaster recovery service for financial trading operations called Telehouse Business Recovery Services. Using the service, banks and brokerages can lease space at Telehouse's Staten Island, N.Y., facility for front- and back-office operations to support off-site trading.

Tools to check SAP benefits

KPMG Peat Marwick is developing cost/benefit evaluation tools for companies that implement SAP AG's R/3 application package. The Big Six consultancy is teaming up with Atlanta-based Client/Server Labs, Inc. to test and analyze for clients the value of large client/server migrations. The service, due for pilot testing next month, takes the lab's benchmarking data and compares it to a specific client's case, such as infrastructure needs, information technology culture and people skills, to rate whether the implementation is a good value, and if not, what can be improved.

Warner-Lambert signs IBM

Warner-Lambert Co. in Morris Plains, N.J., has signed a five-year call-center services contract with IBM Global Services to provide human resources, benefits and payroll information to Warner-Lambert's 25,000 employees in the U.S. and Puerto Rico. Terms weren't disclosed.

Comdisco buys ERI

Comdisco, Inc. has acquired Exchange Resources, Inc., a Minnetonka, Minn.-based disaster recovery services firm that specializes in trading-floor recovery for customers in the financial services industry. Rosemont, Ill.-based Comdisco purchased Exchange Resources, which filed for Chapter 11 bankruptcy protection in September, for $2 million in cash.

Insurer's foresight pays off

CONTINUED FROM PAGE 69

Firm's shift to relational architecture helped cut costs and CPU utilization

on people," said Imes, 50, a 30-year industry veteran. In fact, Imes became aware of the millennium bug in 1968. At the time, he was working at a different company where senior managers shot down a proposal to expand the company's two-digit date fields to four digits because it would have "cost three more disk drives at $150,000 a pop," Imes said.

Imes also had a tough time convincing Lafayette Life's top brass that the company's IS department should develop what is now called the New, On-Line Adminstrative Computer System (NOLAS) — year 2000 issues aside.

"When this proposal came up, I didn't think we could do it. It was too big of a job to bite off with our internal staff," said Tom Gross, executive vice president at the Lafayette, Ind.-based insurer.

But Imes convinced Lafayette Life officials that a 14-member project team could develop NOLAS within 40 months and help the company build insurance products faster by speeding data retrieval under a relational database architecture.

Imes was right. Using NOLAS, Lafayette Life developed a graded premium whole-life product in six months, vs. the 12 to 18 months it would have taken to "spin tapes and match data" under the old environment, Imes said. That package has been the company's top seller for the past two years, said Larry Mast, senior vice president and chief marketing officer at Lafayette Life.

"At [three] other insurance companies I've worked for, [insurance] products had to match what the systems could do," Mast said. At Lafayette Life, systems "are never a hang-up for us getting products to market."

ONLY ONE FIX NEEDED

Aside from NOLAS, the only other software Lafayette Life runs is Notes and SmartSuite from Lotus Development Corp. in Cambridge, Mass., and neither product is date-sensitive, Imes said.

Bruce Hall, a research director at Gartner Group, Inc. in Stamford, Conn., said Lafayette Life probably covered "most, if not all" of its data points when it converted its Cobol and assembler batch code to a relational database format. But even the most scrupulous conversion efforts can be undermined by hidden code buried deep within legacy systems, according to Hall. "If you look hard enough, you can usually find failure points," he said.

Imes isn't worried. "Our policyholders are going to be taken care of after year 2000. That's the most important part," he said. □

U.S., Japan in telecom spat

By Rob Guth
Tokyo

JAPAN MAY NOT be willing to renew an agreement that calls for buying foreign-made telecommunications gear if the U.S. prevents Japan's two largest telephone companies from entering the U.S. market, a senior government official said last week.

The agreement concerns procurement of foreign-made telecommunications equipment by Nippon Telegraph and Telephone Corp. (NTT).

The U.S. Federal Communications Commission is stonewalling the entry of Japan's two largest telecommunications providers into the U.S. market, said Toshiyuki Minami, a senior adviser at Japan's telecommunications ministry.

The Japanese government disapproves of what officials called a linking of government-level trade issues with applications by NTT and Kokusai Denshin Denwa Co. for licenses to operate in the U.S.

"We think that the applications by [Kokusai Denshin] and NTT should be promptly certified by treating them independently of other trade-related issues, including foreign-ownership restrictions and NTT's procurement," Minami said.

Minami's comments followed the dispatch of a letter from the Japanese government to FCC Chairman Reed Hundt that blasted the decision by the FCC to hold up the Japanese firms' applications.

The letter also charged that the U.S. actions violated agreements under the World Trade Organization, Minami said.

According to Minami, the U.S. Trade Representative's office had told the Japanese embassy in Washington that the U.S. has delayed the applications by NTT and Kokusai Denshin because the U.S. is unhappy that Japan has placed a 20% cap on foreign ownership of Japanese telecommunications companies. □

Guth writes for the IDG News Service in Tokyo.

Supreme Court hears arguments on decency act

By Sari Kalin
WASHINGTON

THE U.S. Supreme Court heard arguments last week about the constitutionality of the Communications Decency Act, which makes it a felony to distribute indecent material to minors over online services and the Internet.

While arguments were being heard, adults and children braved a cold rain outside to press their view.

Vocal protesters carried balloons and signs with slogans such as "Don't sacrifice my child on the altar of the First Amendment" and chanted "Enough is enough . . . children don't need the smut."

Both parties in *Reno v. American Civil Liberties Union* were allowed 35 minutes to argue whether the law violates the First Amendment to the U.S. Constitution, which protects the right to free speech. The court is expected to make a decision on the case by the end of June.

The ACLU-led coalition of plaintiffs argued that the law is unconstitutional because it criminalizes speech between adults that is protected under the First Amendment.

But in his arguments, Seth Waxman of the U.S. Department of Justice said it is in the interest of the government to protect children from indecent material on the World Wide Web.

BROADCAST COMPARISON

The government also argued that the Internet is similar to a broadcast medium such as radio or television. In those media, indecency restrictions have been allowed by the court to stand, including bans on profanity.

The plaintiffs, however, have argued that the Internet has more in common with print media and should be allowed similar free speech protections.

One of the plaintiffs' arguments is that there is no way for newsgroups, chat rooms and list servers to screen out minors. □

Kalin writes for the IDG News Service in Boston.

Purchasing easier with fewer options

CONTINUED FROM PAGE 69

Back then, users would spend an average of five hours paging through catalogs and consulting with colleagues about which system to buy. After that, they would need to fill out a paper-based purchase order that had to be channeled through several managers for approval.

Under the new program, desktop and laptop users choose between a midrange or high-performance PC or Apple Computer, Inc. Macintosh and place the order directly with the supplier via the World Wide Web. Users are issued electronic purchasing cards with a credit limit of $5,000. The program doesn't apply to purchasing scientific workstations or other specialized equipment that a researcher or other user may require.

The program isn't mandatory, but 80% of users who have purchased PCs in the past 10 months have gone through the program. Time savings from the elimination of paperwork has worked well in winning over choosy users. The new systems are delivered within 10 days, as opposed to weeks or months.

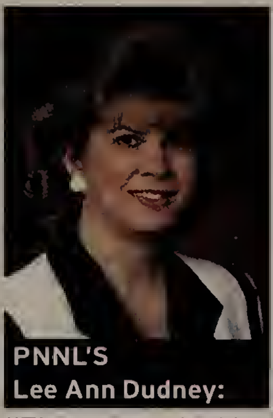
"It's one of the best things they've ever done at the lab," said Tim Strycker, a senior research scientist. "In the past, purchases entailed completing a form, typing it out, sending it to the purchasing people and going through a lot of cycles. Under this program, you sit at your computer, type in your order, and when you hit enter, the order is placed and it's a done deal. It's a tremendous time-saver."

It's also a big money saver, according to Dudney, who estimated that the lab has saved $372,000 by requiring its vendor to preconfigure the standardized systems to plug in to PNNL's Windows NT-based network. Requiring the vendor to pretag the systems for inventory purposes has saved the lab another $40,000, she said.

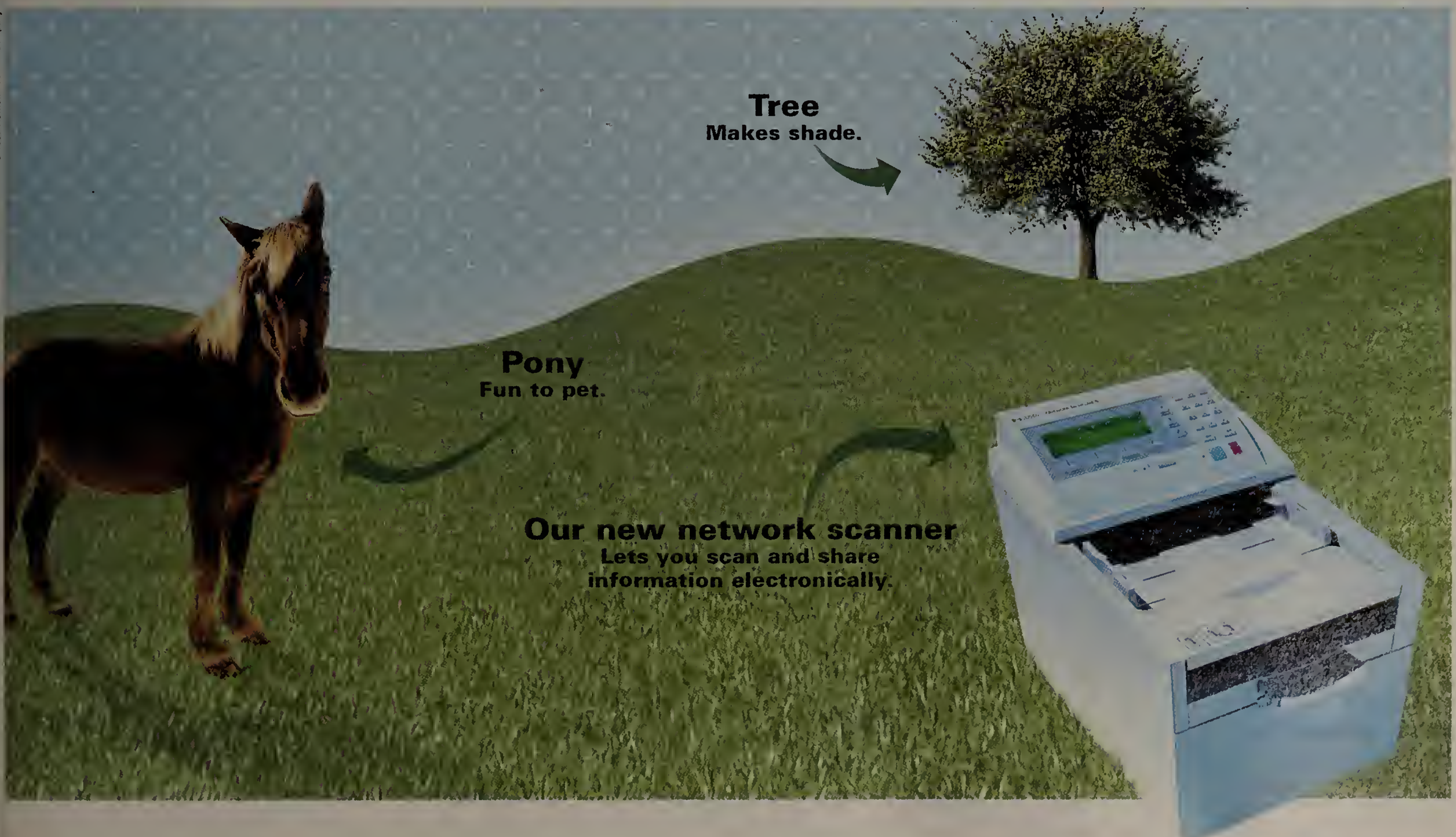
Users have also cut back the time it takes to select and order a computer from five hours to 30 minutes, for a worker-hour savings of about $94,000 annually.

For a one-time fee of $150, users also get a three-year warranty for on-site repairs, parts and labor. Previously, users had to call a separate maintenance unit each time they needed a repair or upgrade.

Dudney said the program's success resulted from its overall user-friendliness. "We knew the process had to be so good that it would be the users' program of choice. It had to be just the opposite of having it crammed down their throats," she said. □



PNNL'S Lee Ann Dudney: **"The process had to be so good that it would be the users' program of choice"**



Data Warehousing

Special Bonus Technical Section

Briefs

Cognos mines desktop

Cognos, Inc. recently introduced desktop data mining software that augments its query and online analytical processing tools. The Scenario software is based on data mining algorithms that Ottawa-based Cognos licensed two years ago from Angoss Software Corp. in Toronto. Version 1.0 will cost $695. It is due to ship next month for Windows 95 and Windows NT.

Prism to resell tools

Prism Solutions, Inc. in Sunnyvale, Calif., recently announced a deal to resell data mart tools developed by Sagent Technology, Inc. in Menlo Park, Calif. Sagent's software for building Windows NT data marts will be a lower-cost alternative to Prism's own data mart tools for Unix and NT. Separately, Prism named a new president and CEO. Warren Weiss, formerly president of Sqribe Technologies in Menlo Park, took over those jobs from James Ashbrook, who remains Prism's chairman.

When will your Web server dynamically query to a relational database?

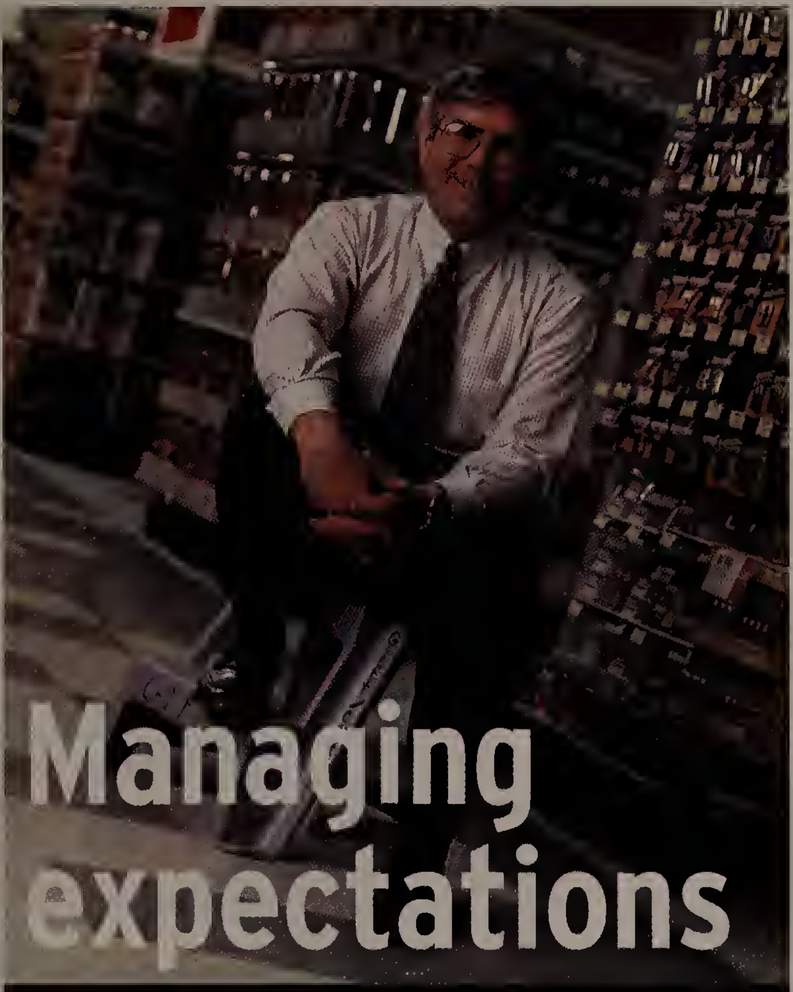
Q4 1996:	17%
Q4 1997:	49%
Q4 1999:	76%

Base: 182 companies; multiple responses allowed

urce: The Data Warehousing Institute, Bethesda, Md.

IBM bundles Sybase

IBM announced that it plans to bundle Sybase, Inc.'s data mart software with multiprocessor versions of its RS/6000 Unix servers. Users will be able to order the hardware/software bundles through either IBM or Sybase in Emeryville, Calif. Sybase's QuickStart DataMart software, which includes its Sybase IQ decision-support database and data extraction tools from Carleton Corp., can be factory-loaded on four-processor RS/6000 models starting in mid-April. Pricing will start at $300,000.



CHRIS CORSMEIER

Managing expectations

ShopKo's Tom Burzinski is putting together as many as six large data marts for various business areas

▸ *IS has to juggle limited resources to meet demand*

By Craig Stedman

MORE, more, more.

Increasingly, that's what end users demand when their companies talk data warehousing. Business needs make it hard to build just one data warehouse and stop, according to information systems managers.

That may mean building a series of single-subject data marts for individual departments or multiple, full-fledged data warehouses. Either way, the burden falls on IS to juggle limited resources and make sure the mix of warehouses doesn't bog down production systems or saddle end users with inconsistent data. The resulting complexity can lead to long development cycles and the need to bring in outside help to cope with the workload.

"It's really more of a management challenge than anything else," said Tom Burzinski, project manager for merchandise data warehousing at ShopKo Stores, Inc. in Green Bay, Wis. The retailer is trying "somewhat of a cookie-cutter approach" as it puts together up to six large data marts for different business areas, he said. It is using Oracle Corp. databases and IBM's RS/6000 SP parallel processor.

SPEED PARAMOUNT

ShopKo expects to get a better handle on inventory costs, customer buying habits and other business factors by analyzing its historical information. And speed is of the essence because of end-user demand, Burzinski said. By going with separate data marts, ShopKo is trying to get tangible results from each phase within 120 days.

"Otherwise, people forget about the project," he said. "We want to keep interest high and the executives happy."

A 400G-byte data mart that holds three years of daily sales records is due to go live late next

User demands, page 78

Databases galore

For some users, the problem isn't building multiple data warehouses. It's trying to impose corporate structures on a hodgepodge of databases that grew almost organically. That can take as long as, if not longer than, building a warehouse from scratch.

AlliedSignal Aerospace in Torrance, Calif., has thousands of databases spread across its 25-plus facilities, said Paul Hoedeman, CIO at the unit of AlliedSignal, Inc.

Much of the data is locked away from users in other facilities, Hoedeman said. Parts are listed differently from database to database. And each business tracks product reliability in its own way.

"It's quite a production for us to put together a report showing the reliability of all the products we sell to American Airlines," Hoedeman said.

The unit just started building an Oracle-based warehouse architecture to provide "a much more systematic way of getting business benefits out of the piles of data," Hoedeman said. But it won't be a quick fix: An integrated combination of data warehouses and data marts will take up to two years to finish, he said. — Craig Stedman

Data marts becoming preferred approach

By Sharon Gaudin

BETWEEN 50% and 70% of data warehouses built this year will be the simpler, more information-specific versions called data marts, research firms predict. Vendors are scrambling to prepare products that will meet the demand.

Sentry Market Research in Westboro, Mass., predicts that 70% of data warehouses built this year will be marts. Stamford, Conn.-based Meta Group, Inc.'s prediction is 50% to 70%, and it also forecasts that data marts will make up half the expected $8 billion decision-support market by next year.

Meanwhile, Informix Software, Inc. in Menlo Park, Calif.; Sybase, Inc. in Emeryville, Calif.; Platinum Technology, Inc. in Oakbrook Terrace, Ill.; and IBM in Armonk, N.Y., (see item at left) have joined the race, many with bundled products that include a front-end analysis tool, servers, a browser and training and support services. Oracle Corp. in Redwood Shores, Calif., is preparing to make its play this month with a bundle that will run on the Windows NT platform. Oracle announced a single data mart product in November. "This is a substantial focus for Oracle," a spokesman said. Oracle hasn't specified which products will be included in the bundle.

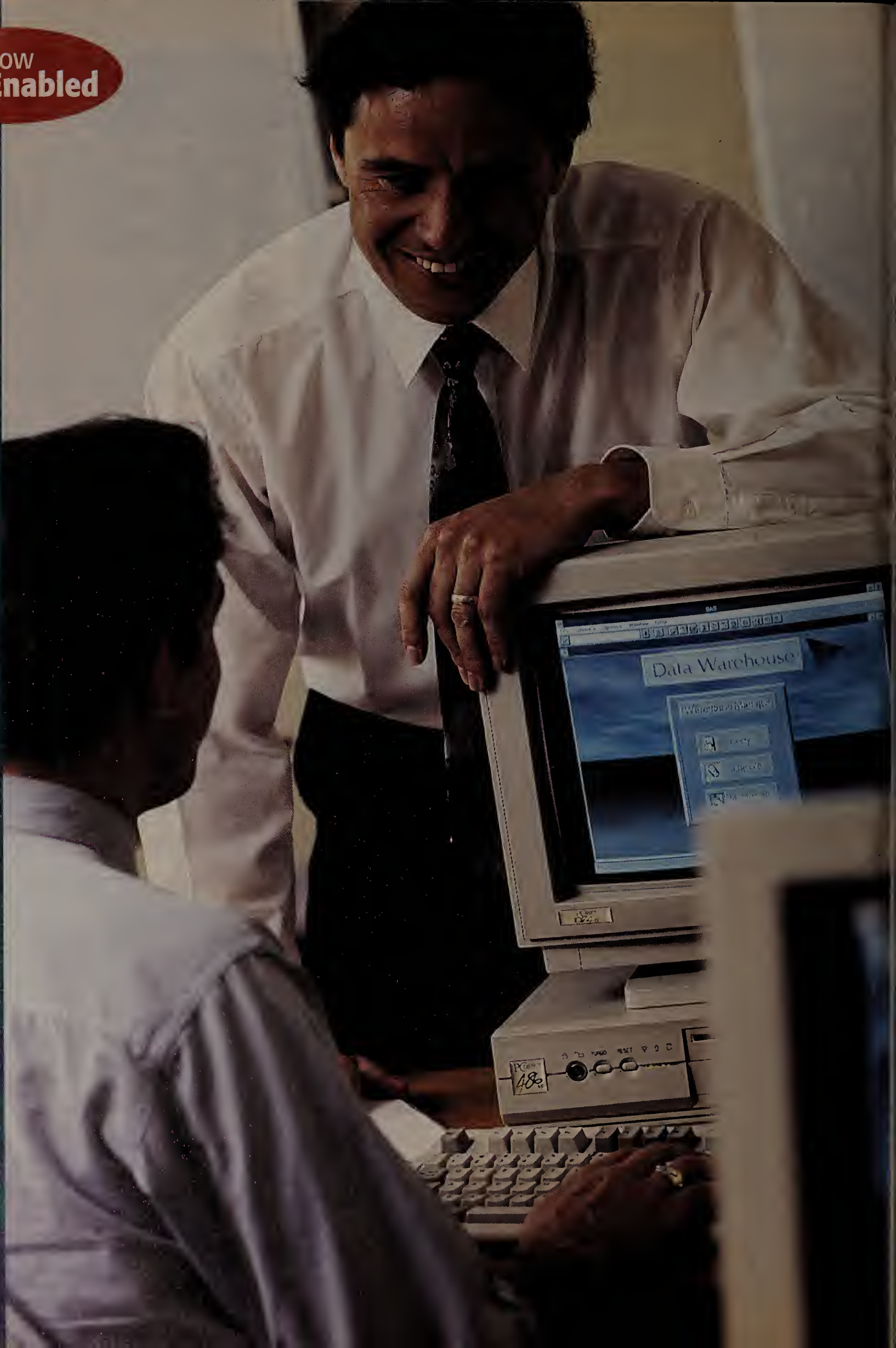
RAY NG

MCI Mass Markets' Chris Courim: "Our business can change every day, and a warehouse isn't flexible enough to change with it"

The products are rolling out just in time for Jeff Sexton, a senior programmer and analyst at ODS Health Plans, a health insurance company in Portland, Ore. "The company has grown a lot in the last few years, and we've had questions that we couldn't answer with the warehouse," Sexton said. "We needed to get information quickly, so we focused on getting the data mart going."

Sexton said ODS Health Plans started building a warehouse and a data mart a month ago. The warehouse, which covers things such as group eligibility, primary-care physician listings, patient histories and doctor assignments, is slated to be operational by the end of the summer. The mart, which follows only claims information, is expected to be up and running

Data marts, page 78


Data Warehouse

As users demand more, IS juggles resources

CONTINUED FROM PAGE 75

> "The only way people believe in technology is if you deliver business results."
> – JoAnn Ashman, Amdahl

month; a second one for inventory data should follow by August. And Burzinski said he expects to top 1T byte all told next year. ShopKo is building a common data model for consistency's sake and writing its own extraction and conversion programs to manage data movement complexities. Another big challenge, Burzinski said, will be to keep staffing levels up after deployment to deal with changes needed when users start firing queries.

NOT ALONE

ShopKo isn't alone in facing a multiple-warehouse future (see chart). Decision-support data can grow so fast that queries can't be answered quickly any other way, said Alan Paller, director of research and education at The Data Warehousing Institute in Bethesda, Md. This should be the year "when management issues go to the top of the heap" for IS, he added.

CVS, Inc. warehouses almost 1T byte of pharmacy data and plans this month to add a separate 500G-byte warehouse for analyzing product pricing and promotions in the retail part of its stores. But the Woonsocket, R.I., chain, which uses Oracle databases on Pyramid Technology Corp. servers, had to put together a second team with outside consultants to make the March deadline.

UP, UP AND AWAY

Platform	Average number of warehouses	
	1996	1998*
Unix	2.8	5.4
Windows NT	2.4	6

*Projected

Base: 240 users surveyed at the Oracle OpenWorld conference in San Francisco last November

Source: The Data Warehousing Institute, Bethesda, Md.

"All our warehouse guys were tied up in the pharmacy system. They're working flat-out on that right now," said Howard Edles, chief information officer at CVS. "And we want to load [the warehouses] in parallel so we can get ahead of the game on the retail side." Providing quick business benefits is especially important because CVS opted not to go through a full cost justification before building the new warehouse, Edles said.

Even vendors are struggling when it comes to building their own data warehouses.

Amdahl Corp.'s IS department spent 12 months creating a framework for tying together multiple data marts while also scrambling to roll out the first ones to keep its business units from acting on their own. "The only way people believe in technology is if you deliver business results, and sometimes you just have to go with the flow," said JoAnn Ashman, Amdahl's CIO.

Two years later, the Sunnyvale, Calif., computer maker is still six months away from finishing an Oracle-based staging warehouse that will eliminate the need to load updates directly from its mainframes into its six data marts. "We don't want to hit the operational systems too many times for the same information," Ashman said.

Premera, a big Seattle-based health insurer, is wrestling with similar issues as it mulls building five Oracle-based data marts to off-load querying from its mainframe — a move that would open up data analysis to a much wider user base. Multiple marts have appeal performance-wise and because different departments want to see individual slices of data, said Guy Hollingbury, a technology specialist at Premera.

But before finalizing its plans by midyear, Premera has to figure out how to synchronize changes across the data marts so users don't end up basing decisions on inconsistent information.

"The technology is one thing," Hollingbury said, echoing other users. "But you have to make sure you have an infrastructure in place that can actually handle all of this." ☐

COMMENTARY

Secrets of success

BOB CARLSON

If you built your information architecture correctly, you already have a data warehouse. Absent that, you become fair prey for vendors.

What does building a data warehouse entail? It probably entails duplicating most of your data by extracting information from your systems and storing it in a separate database. The hardware components are the same as in any other computer system, though vendors will try to convince you that you need massively parallel processors that can analyze many gigabytes of data in seconds. That's nonsense. No system will analyze gigabytes of data in the two seconds that customer interactions take. So minutes or hours, or even overnight response time, is probably adequate for all but the simplest database inquiries — which can be handled by the computers you already have.

Also, it will take days to weeks after end-of-month processing to load your information files into your data warehouse, so the data will be stale anyway. Is getting access to month-old data in seconds really worth the cost of a data warehouse?

Access to information must be simple enough for your staff to understand. That's crucial. But most data warehouse access software is complex and requires professional assistance, or significant training, to use. All programs require elaborate testing to prove they actually work. Query access software tends to be unique and ad hoc — that means untested. And with untested queries, you can't be sure if the answer you get is relevant to the question you had in mind — or if the computer interpreted your query as you intended. And you are using the responses to run your business.

Still, data warehousing is fun and interesting. Your techies and marketers will love it. That can be an expensive combination. They will create huge transaction databases that will quickly consume vast technology resources and become unmanageable. It will become impossible to track and update useful information. You will use million-dollar technology to answer $10 questions.

Does that mean Hongkong Bank doesn't use data warehouses? No, it doesn't. Data warehousing techniques are valuable, and we have used them for many years. But we leverage our technology infrastructure and expertise and develop the processes in-house.

The key for us is to avoid data warehousing hype and fads and to think through our requirements — and then to leverage our technology infrastructure and expertise to implement effective integrated solutions. ☐

Carlson is head of technical services at Hongkong Bank. This column was written for Computerworld Hong Kong.

Data marts becoming preferred approach

CONTINUED FROM PAGE 75

next month at a quarter to a third of the cost of the warehouse. Sexton declined to give the cost of the two projects.

Cost and complexity are two reasons marts are so popular. Because they contain fewer pieces of data that need to be collected, cleaned, organized and filed, data marts are faster and less expensive to build than full-blown warehouses. A retail company, for instance, might take one to three years to build a data warehouse of sales, demographic, finance and marketing information and spend millions of dollars doing it. But the company could build a data mart with information on just customers' spending habits or just sales in the Northeast in three to six months, at 10% to 100% of the warehouse cost.

A data mart is simpler than a warehouse to maintain, too. When there are multiple categories of information, a change in one component can have a dramatic effect on other aspects of the warehouse.

BULLY ON MARTS

Denver-based MCI Mass Markets is one user that is bully on data marts.

"Building a gargantuan warehouse is tough, because our business can change every day, and a warehouse isn't flexible enough to change with it," said Chris Courim, systems manager at the marketing division of telecommunications giant MCI Communications Corp. "With a data mart, we can change it and manipulate it, and we are able to get at data we couldn't find before. That's mission-critical to us."

Courim said MCI Mass Markets has been using Sybase IQ to build a data mart for customer billing information. He added that the division started the data mart a year ago and may have already seen a return on it. He declined to be specific.

Although data marts seem to work for some companies, some analysts and industry watchers said marts are simply a marketing ploy that repackages the data warehouse concept as a new avenue into corporate wallets. Another view is that marts and warehouses together are the best way to fill a company's decision-support needs.

That is what Dave Foust, a technical specialist at South Carolina Electric & Gas Co. in Columbia, said he believes. Foust has been using Sybase IQ to build a data mart for marketing to test the waters before diving into a full-fledged data warehouse.

"This has been a pilot project, and it's worked very well for us. I'm sure we'll do more," he said, adding that the utility is considering adding two more data marts.

"Data marts are not replacing anything," said Brian Murphy, a senior analyst at The Yankee Group, a consultancy in Boston. "Often, it's adding something on without taking something away. [Data warehouses and marts] can work together very well because they fit separate needs." ☐

DATA POINTS

50%	Percentage of decision-support market held by data marts in 1998*
$8 billion	Size of decision-support market in 1998*
50% to 70%	Percentage of data warehouses built this year that will be data marts*

* Estimated

Source: Meta Group, Inc., Stamford, Conn.

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Managing

In search of civility
It seems that when IS professionals disagree, they don't do it politely. But it's time they should, columnist Peter G. W. Keen writes. Page 86

How does Windows NT fit in to your company?

It isn't perfect, but for small and midsize server needs – and a growing number of desktops – it may be good enough. – By Robert L. Scheier

forced march

PHIL WILKERSON at Gap, Inc. in San Bruno, Calif., says the retailer's 2,500 desktop PCs are marching from OS/2 to Windows NT Workstation

ERIC MILLETTE

After a slow rollout, Windows NT is finally reaching critical mass as a corporate applications server.

For many information systems managers, NT Server is attractive, not because of its technical excellence but because it runs on relatively inexpensive Intel-based hardware, is easier to manage than Unix and is a safe bet because of its third-party support.

But those IS managers are still forced to go with Unix for database-intensive applications or applications that handle more than several hundred concurrent users.

On the client side, NT Workstation also is gaining momentum, although it's held back by compatibility problems with earlier Windows applications and a lack of support for plug-and-play and power management.

It's your call on whether, and when, to migrate to NT compared with other operating systems such as Unix. But to help you decide, use our decision

Forced march, page 82

forced march

CONTINUED FROM PAGE 81

checklist and the following examples of how the move is going in some large organizations.

NT DESKTOPS, UNIX SERVERS

For Phil Wilkerson, director of technical architecture at Gap, Inc. in San Bruno, Calif., choosing when to use NT or Unix is almost a "no-brainer," he says. "The industry's already stood up and decided which way they're going to go," he says. "It's a forced march."

For the retailer's 2,500 desktop PCs, the march is from OS/2 to Windows NT Workstation. "Vendors like PeopleSoft, Information Advantage and Forte . . . those folks are going toward the 32-bit Windows world" on the client, Wilkerson says.

Wilkerson says he chose NT Workstation over Windows 95 because it suffers fewer time-wasting system crashes. "Our commitment to our business partners is that we have stable machines," he says.

Choosing when to use NT or Unix is almost a "no-brainer. The industry's already stood up and decided which way they're going to go. It's a forced march."
– Phil Wilkerson, Gap, Inc.

Like other customers, Wilkerson says he sees Microsoft Corp. marrying the Windows NT and Windows 95 code bases over time but keeping the Windows 95 interface.

Because that's the interface he gets with the current version of NT, why not move right to NT?

Unlike some, Wilkerson says he hasn't had problems running older applications on NT Workstation. "The majority of our business applications are all 16-bit Windows," he says, and with Service Pack One for Windows NT Workstation 4.0, running those applications "seems to be a nonissue."

Wilkerson also says he gets acceptable performance on 90-MHz Pentium desktops with 16M to 32M bytes of RAM.

On the application server side, Gap is on another forced march — to Unix. "We have a fairly large, multiple-gigabyte database for our data warehouse," Wilkerson says. "Unix was an attractive option because its scalability and performance were proven."

Again, key server-side vendors such as Informix Software, Inc. in Menlo Park, Calif., Information Advantage, Inc. in Minneapolis and Forte Software, Inc. in Oakland, Calif., drove the choice.

Those vendors "have more experience in the Unix environment," Wilkerson says. Windows NT Server has its place, but only for less-demanding applications such as Lotus Notes.

Gap also is sticking with NetWare 3.x and 4.x for its file-and-print servers, because "we haven't seen anything yet that warrants a move to NT Server for file-and-print. We like the robustness from a security perspective of [Novell, Inc.'s NetWare Directory Services]," Wilkerson says.

NT DESKTOPS, NT SERVERS

Ray Palazzo, a member of the Advanced Technology Group at LG&E Energy Corp. in Louisville, Ky., says there are plenty of holes in Windows NT.

On the client side, "we're waiting for NT to deliver some basic features" already in Windows 95 such as plug-and-play and power management, Palazzo says. On the server, NT still lacks features now offered by Novell's NetWare, such as a directory service and the ability to cap the size of a directory, he says.

So what's the utility choosing for its long-term operating systems? Windows NT, for virtually all its 1,600 clients and 80 servers.

Palazzo says he has faith that Microsoft will eventually fix NT's problems.

But "the biggest driving factor for it being our strategic direction is the sheer momentum" of support for NT from application and tool vendors, Palazzo says.

More than 90% of LG&E's desktops still run Windows 95; only engineers and application developers run Windows NT Workstation.

The utility will move to NT Workstation during the next few years as Microsoft adds to it the features Palazzo needs and as prices drop on the additional memory and the Pentium Pro PCs on which NT Workstation runs best.

LG&E is further along the migration on the server, with 55 application servers running Windows NT, 25 file-and-print servers running NetWare and 10 high-end application servers running Unix.

"NT is very cost-effective" because, for most applications the utility needs, NT can run on comparatively low-cost Intel- and Alpha-based servers, Palazzo says. Administration and management "is where NT probably excels," he says. "People with very little training can catch on very quickly."

For those reasons, Palazzo has begun a slow migration of the file-and-print servers to NT Server and "will probably expedite it with the release of a viable [NT] directory service" expected later this year. In the long run, only a few high-end, transaction-processing applications will run on Unix.

WINDOWS 95 CLIENTS, NT SERVERS

The IS arm of Chevron Corp. is trying to cut costs and improve service to its 44,000 internal customers.

With that many users and 1,500 servers to support, that means sticking to standards.

On the client, Chevron is going with Windows 95 instead of NT because of Windows 95's compatibility with older DOS and 16-bit Windows applications, says Michael Wolfe, a network software engineer at Chevron Information Technology Co. in San Ramon, Calif.

"We're implementing an IT vision that will have us delivering a standard bundle of desktop applications" to users by year's end, Wolfe says.

Although NT Workstation was a tempting choice, "there's probably not enough time to go through all the application integration and certification issues [we would] have to face with Windows NT," Wolfe says.

Most of Chevron's PCs have already been migrated from earlier versions of Windows to Windows 95.

As part of its long-term strategy, in September 1995 Chevron chose Windows NT Server as its network operating system over NetWare.

Unix wasn't considered for low-end application servers because of its higher hardware and software costs, Wolfe says.

Judged on underlying technology, the NT vs. NetWare competition "was very close," Wolfe says, with NetWare stronger as a file-and-print server and NT stronger as an application server. Both had similar third-party support and tools available at the time.

The decision tipped to NT because of the third category, "intangibles," such as market momentum.

Chevron's servers still are about 70% NetWare, 20% NT and 105 Unix, Wolfe says.

Wolfe expects that mix to shift to 80% NT, 10% NetWare and 10% Unix. ☐

Scheier is Computerworld*'s senior editor, management. Senior editors Laura DiDio and Jaikumar Vijayan also contributed to this story.*

Survey says:

- A recent survey by Forrester Research, Inc. in Cambridge, Mass., of 50 IT managers at Fortune 1,000 companies showed that Windows NT will dominate in client/server electronic-mail upgrades, in migrations from NetWare and OS/2 and as corporate intranet servers.

Forrester predicted that NT shipments would grow from 465,000 units in 1996 to 936,000 in 1999 but that NT won't have a significant impact on the Unix market until 2000.

To NT or not to NT

The skinny from IS managers on why you should – or shouldn't – go with Windows NT

NT Server is good for:

- Relatively small applications (fewer than 300 to 400 concurrent users)
- Departmental applications such as E-mail or Lotus Notes
- Environments that can wait for Microsoft's directory service, expected early next year

NT Server isn't good for:

- Very large-scale, transaction-intensive applications (more than several hundred concurrent users)
- Applications that now require clustering of more than four servers (Microsoft's initial clustering technology, expected in the next few months, will support only two to four servers)
- Administering more than six network domains or large groups of users with several levels of access privileges
- Applications that demand high availability

NT Workstation is good for:

- Ability to set multiple passwords on users' machines or limit what software they can run
- A stable platform for 32-bit applications
- Avoiding a migration first to Windows 95, then to NT

NT Workstation isn't good for:

- Running large numbers of older, 16-bit applications
- Mobile users who need power management features in operating system to maximize battery life
- Shops that can't upgrade to the required hardware (usually a Pentium 166 or above with 32M bytes of RAM)

RESOURCES HOT HAPPENINGS

Attendees at May's DB/Expo '97 in San Francisco and the Women in Information Technology Conference in June (just down the bay in Santa Clara) can enjoy a San Francisco cable car ride at the end of a day

SAN FRANCISCO CONVENTION & VISITORS BUREAU PHOTO BY MARK GIBSO

The must-attend IS events for May & June

Women in Information Technology Conference

Santa Clara Convention Center
Santa Clara, Calif., June 4-6

Women in Technology International's (WITI) annual conference has become the top women's event in computing, no matter where women stand on their career ladders.

The WITI conference celebrates women's contributions to technology and science, discusses issues affecting women in information systems organizations and offers leadership training and sessions on professional development and technology. The conference also includes a Mentor Program that features 100 senior IS women who will guide you through the conference, meet with you personally and help you move up the corporate IS ladder. For women, it's hard to imagine a better networking opportunity.

Cost: $395 by April 6, $495 afterward. **Contact:** Julie Lubering, WITI, (800) 334-9484, or via the World Wide Web at **www.witi.com**.

@COMPUTERWORLD

If you're looking to attend an IS conference or workshop, visit our Web site, @Computerworld (www.computerworld.com), where you can find listings of upcoming events on the Events Calendar and IT Careers pages

Project Leadership Conference

Sheraton Chicago Hotel & Towers
Chicago, June 23-25

This conference, hosted by ABT Corp. in New York, has expanded to two sites (the second event will take place in September in San Francisco).

It contains a mix of "soft" and "hard" skills and is devoted strictly to information technology.

It also features tracks in project management basics, personal communication skills and the Project Office. Two speakers of note: Herb Cohen, called "the world's best negotiator," will present a session on developing project management negotiating skills; and year 2000 authority Ian Hayes will address millennium-conversion projects.

Project managers should come away having learned some new lessons.

And if you're a project leader and believe you've done a bang-up job, have your boss nominate you for a project leadership award. The conference will honor five leaders.

Cost: $995 by April 15, $1,095 afterward. **Contact:** ABT, (800) 477-6532, or via the Web at **www.abtcorp.com**.

DB/Expo '97

Moscone Center
San Francisco, May 12-16

Last December's fall DB/Expo in New York was pretty much deadsville in its final fling as a separate event. (It's being combined with some other waning New York conferences.)

But the spring DB/Expo soldiers on, and organizers expect more than 25,000 people to descend into the Moscone Center's underground caverns.

The San Francisco location doesn't hurt, we're sure. DB/Expo also will offer separate conference tracks on database development, data warehousing, Internet/intranet development and client/server and object technologies, not to mention a new year 2000 pavilion.

Database developers and administrators should find a lot of peer-group members among the crowd, but IS managers are invited, too.

Traffic may be a bit light around the IBM booth, though: The DB2 user group just happens to be holding its annual North American conference in Chicago the same week.

Cost: $1,595 for full conference. **Contact:** Blenheim NDN, (800) 232-3976 or (415) 966-8440, or via the Web at **www.dbexpo.com**.

Staying Ahead on Human Resources Initiatives

Ritz-Carlton Hotel
St. Louis, June 23-24

In the toughest labor market in decades, clueless IS managers haven't a chance of retaining good people. That makes "Staying Ahead on Human Resources Initiatives" a most timely topic indeed.

The host Information Management Forum (IMF) is a midsize, Atlanta-based membership group for IS executives. Members, not consultants or vendors, give candid presentations, and there's plenty of time for follow-up discussion. If you want to hear from top IS managers on workforce diversity, telecommuting, motivating staff before outsourcing, retention and training, this is a good chance to check out this group.

Cost: $1,150 for nonmembers. **Contact:** Bill Huffstutler at IMF, (770) 455-0082; E-mail: **timf@mindspring.com**.

Networld/Interop '97

Las Vegas Convention Center
Las Vegas, May 5-9

Networld/Interop is the best place to learn what's coming next in networking and to find fixes for what you've already got. The bad news: It's in Las Vegas.

But it's smaller than Comdex, so you can actually navigate the exhibits and get in to the technical tutorials and workshops that run all week.

Conference sessions and showcases cover technologies such as switching, security and management for a LAN, WAN, intranet or the Internet.

Keynote speakers include officials from Bay Networks, Inc., Computer Associates International, Inc., Microsoft Corp. and Nortel Ltd. (Northern Telecom).

Cost: Ranges from $495 to $2,495. **Contact:** Softbank Expos, (800) 944-4629, or via the Web at **www.interop.com**.

Technical Recruiting Conference

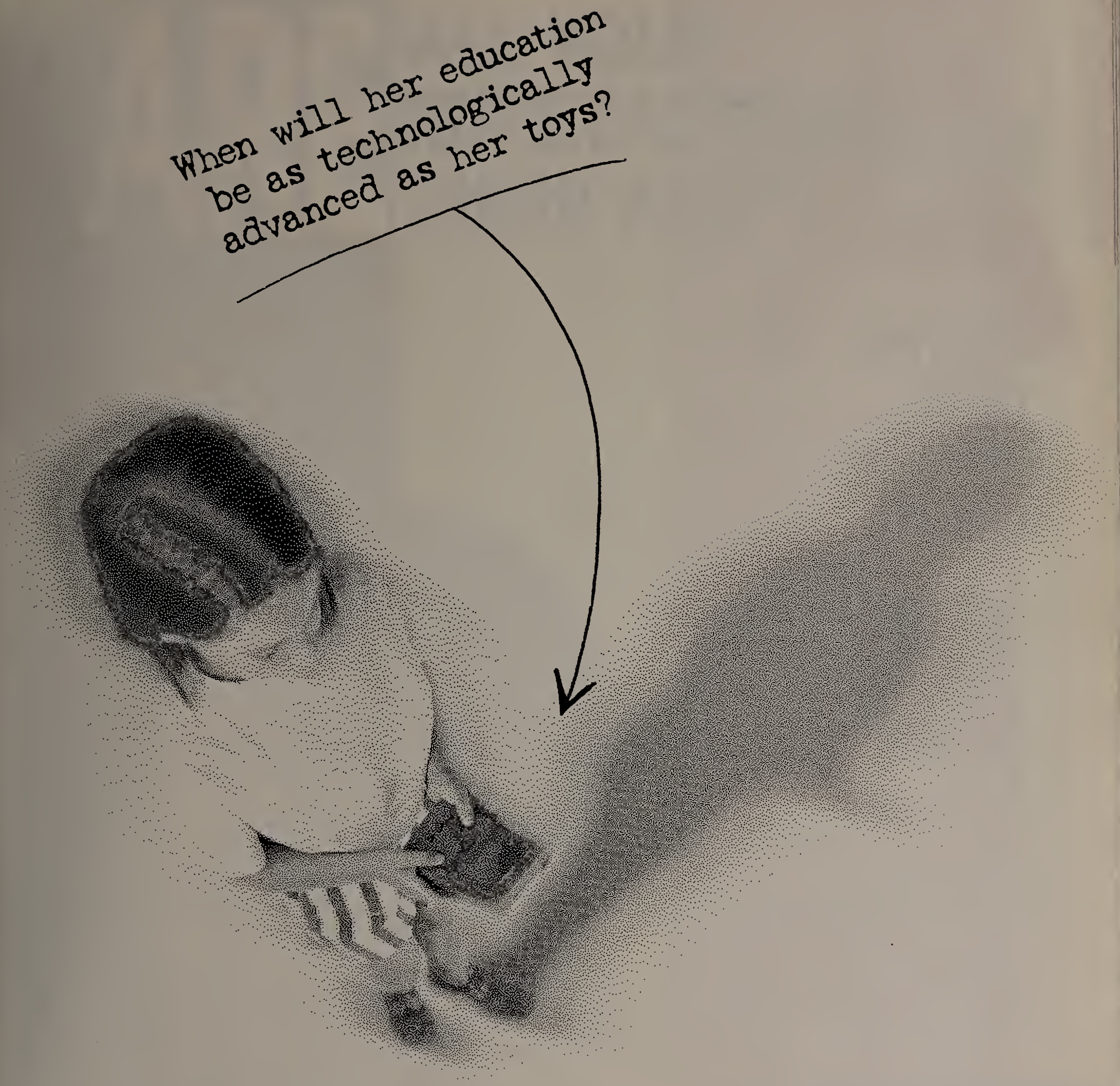
Marriott River Center Hotel
San Antonio, June 8-11

The nation's largest technical recruiting conference — 350 corporate technical recruiters will attend — focuses on effective recruiting strategies for computer professionals, online recruiting and job hunting, corporate universities, education and certification.

Recruiters will discuss issues, trends and challenges in recruiting technical talent.

Cost: $700. **Contact:** *Computerworld*, Framingham, Mass., (800) 488-9204, or fill out a request form on the IT Careers page at *Computerworld*'s Web site, **careers.computerworld.com**.

Computerworld *staff members Allan E. Alter, Laura DiDio, Charles Babcock, Patrick Dryden, Julia King, Rick Saia, Craig Stedman and David Weldon contributed to this report.*


When will her education
be as technologically
advanced as her toys?

PETER G. W. KEEN

IT'S TIME FOR IS TO LEARN CIVILITY

ARE YOU A NAZI? If you work in IS, chances are someone has called you one — if not to your face, then behind your back.

IS is a field where people routinely call other professionals they disagree with "Nazis." It's part of the "I'm an expert and you're a fool" attitude that litters the conversations of IS. Talking like Rush Limbaugh may make the speaker feel — sorry, *I know* — he or she is absolutely right, but it really turns non-IS managers off. We need to learn to say "I think" instead of "I know" and "I respect your opinion" instead of "you're a fool" or "you're a Nazi."

The syndrome, which might be termed the IS Certainty Principle, is apparent in the debate about the future of network computers. That is an extraordinarily complex issue, dominated by uncertainty, volatility and risk. There are powerful arguments on both sides of the Next Wave of the Future/Dead End argument. The network computer may be a bust, or it may invalidate the entire Microsoft business model. No one knows.

But the N-word keeps popping up. Michael Dertouzos, head of MIT's Laboratory for Computer Science, says in the February issue of *Wired* magazine, "In some Nazi companies [network computers] will succeed very well." Jake Kirschner, in his column in the Jan. 21 issue of *PC Magazine*, describes supporters of network computers as "longtime conspirators in league with the big-iron, glass house IT Gestapo." He adds verbal flourishes about "IT jackboots" and "technological blackshirts." He also says, "It's never safe to underestimate the forces of repression in the world."

Gestapo? Jackboots? Repression? Those are serious accusations, considering what the real Nazis did. Milder comments, scattered across the IT press, merely call those of a differing opinion fools.

The strengths of IS professionals have always been inquiry, enthusiasm and willingness to take a stand. But those can too easily become dogmatism and dismissal of others. That is why so many executives simply don't listen to IS people.

The chairman of a Fortune 20 company told me he refuses to hear presentations from his own IS managers because they try to "sufflectate" him, meaning they try to suffocate him with words. They can't listen — only lecture.

He and other executives I talk with find IS people arrogant and assertive. They also too often hear technical experts degrading their peers. The anti-IBM, pro-Digital zealotry of the 1980s and the Apple vs. Microsoft quasi-religious wars are examples. Several CEOs with whom I've discussed the ideas in this column told me that when IS people trash one another in front of them, their own reaction is, "Why should I listen to any of them?" ("Any" increasingly means vendors, whose senior executives are becoming as assertive and dismissive in their sense of right and certainty as IS professionals.)

IS pays a price for such assertiveness. First, we are too often wrong in our assured forecasts. We have a dreadful reputation among business managers in that regard.

Second, we talk at — not to — business managers. We often end up believing communication is about talking louder. We push opinion as fact. What do executives hear when IS bigots talk? Why should they listen?

The excitement of the IT field today is its very complexity and uncertainty and myriad of possibilities.

Respect all that. Accept that professionals who have different hopes, interpretations and forecasts from your own may not be fools at all.

And please recognize that accusations that others are Nazis say more about you than about them. Then, businesspeople will hear you.

The history of IS during the past 30 years might well have been very different had we spent more time listening than lecturing. Communication is in the hearing, not the talking. ☐

Keen can be contacted via his World Wide Web site, www.peterkeen.com.

Survey: Half of CEOs include IT in strategy

Half the CEOs and boards of directors of the world's largest companies now consider information technology when they develop corporate strategies, according to a survey of 100 such executives by management consulting firm A. T. Kearney, Inc. in New York.

Those executives said IT is an integral part of the strategic decision-making process, instead of being brought into the picture after a strategy has been set. In a further sign that information systems has moved beyond a back-room infrastructure function, the respondents also said the board of directors initiates nearly one in five IS projects.

Forty percent of the respondents said they spend more than 10% of their time keeping up with IT, and 69% said they had a very good or fairly good working knowledge of the IT used at their companies.

"Technology is considered too critical to success to be left solely in the hands of technologists," says Doug Aldrich, a vice president at A. T. Kearney and chairman of its Strategic Information Technology Practice.

Mark Factor, vice president of IS at Au Bon Pain Co. in Boston, says he agrees with the survey results. His CEO spends "double to triple the amount of time he used to spend" on IS-related issues, Factor says. For the fast-growing restaurant chain, he says, "three out of the top 10 critical success factors in any given year are IS-related."

Those issues range from replacing outdated systems to ensuring that critical inventory and forecasting applications work right, Factor says. But just as there's more opportunity for IS to help the business, he says, "there's more risk in the back room now." — *Robert L. Scheier*

f.y.i.

Can we talk here?

When an IT professional and an end user have a conversation, do they understand each other?

In two recent surveys, IT consultants and technology executives said conveying technical information is the greatest challenge when working with users.

The surveys were developed by RHI Consulting in Menlo Park, Calif., a division of Robert Half International, Inc. that specializes in IT staffing. One survey polled 1,000 chief information officers from randomly selected U.S. companies that have more than 20 employees. The second survey polled 300 consultants from RHI Consulting's U.S. employee base.

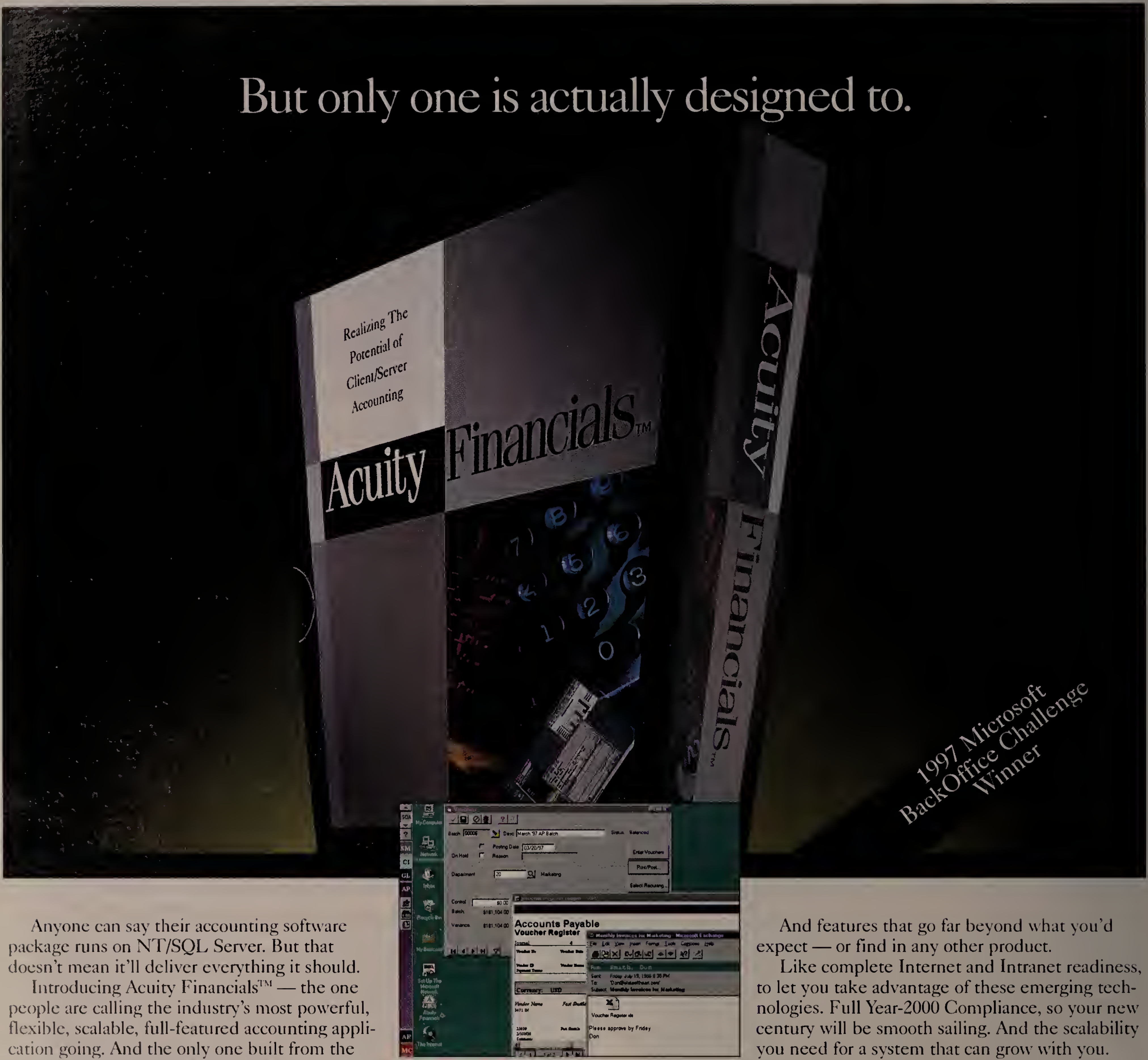
People in both groups were asked to name the greatest challenge in working with end users. One-third of the CIOs cited conveying technical information in nontechnical terms; 42% of the consultants offered the same answer.

To bridge that gap, IT professionals are brushing up on communications and interpersonal skills, says Greg Scileppi, executive director at RHI Consulting.

For example, Scileppi says, they're using analogies to help explain computer functions and providing more hands-on instruction. "Increasingly, the role of the IT professional involves facilitating change," Scileppi adds. "Those individuals who can ease the transition to a new technology through effective communication are invaluable." — *Rick Saia*

Lots of accounting software programs say they run on NT®/SQL Server.™

But only one is actually designed to.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Anyone can say their accounting software package runs on NT/SQL Server. But that doesn't mean it'll deliver everything it should.

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Like complete Internet and Intranet readiness, to let you take advantage of these emerging technologies. Full Year-2000 Compliance, so your new century will be smooth sailing. And the scalability you need for a system that can grow with you.

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Before you make a decision, make sure to run these numbers: 1-888-4ACUITY.

Because when it comes to accounting software designed specifically for today's NT/SQL Server, we're not just the best choice.

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Buyer's Guide

BUYER'S SATISFACTION SCORECARD: Survey reveals that users lean toward less complex tools, such as Microsoft's Visual Basic and Powersoft's PowerBuilder, for application development

APPLICATION DEVELOPMENT TOOLS: SIMPLICITY SELLS

DIANE FENSTER

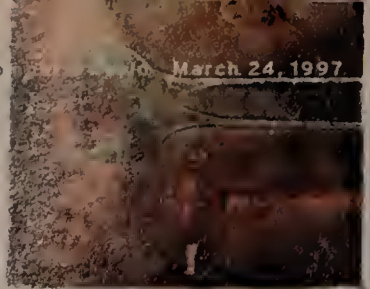
By Kevin Burden

KISS may be the new buzzword for application development. No, not that kind of kiss. The "Keep it simple, stupid" kind.

For several years, industry experts have been waiting for complex, expensive development environments to establish themselves in the enterprise applications market and shove aside what have been seen as underpowered desktop- and workgroup-level tools.

But in a *Computerworld* survey of 156 large companies, the relatively simple, lower-end tools such as Microsoft Corp.'s Visual Basic and Powersoft's PowerBuilder remained the dominant choices for building multidepartmental, multitiered corporate applications.

Simplicity sells, page 90



SIMPLICITY SELLS

CONTINUED FROM PAGE 89

The survey represents only a snapshot of the users in the application development market. It doesn't pretend to be an accurate representation of the vendors' market shares. A few respondents said they had experimented with some of the more successful high-end environments, such as Forte Software, Inc.'s Forte and Neuron Data, Inc.'s Smart Element Object. But ultimately they selected simpler tools.

Never mind that the users are building multidepartmental applications, some of which are critical to their organizations' success: High-powered functionality took a backseat to ease of use when these users chose their tools. Users said dealing with the learning curve was their top challenge, and their chosen tools are far less complicated than high-end tools such as Forte, whose makers acknowledge carries an 18-month learning curve.

What were the biggest challenges your organization faced during the development process?

Learning curve	12%
Lack of development experience	10%
Multiplatform support	6%
Coordinating developer workgroups	5%
Expertise with development tool	4%
Training	4%
Migration from mainframe to client/server	3%
Budget	2%
Finding qualified people	2%

Percentage of responses. Base: 170

The high-end tools clearly don't have the market acceptance their vendors would like, according to Steve Hendrick, a director at International Data Corp., a research firm in Framingham, Mass. "High-end tools have only captured roughly 10% of the $3.5 billion [fourth-generation language] market," he says. Much of the resistance to them is because of their learning commitment, high prices and the market's ability to build most of its applications with less-sophisticated tools, Hendrick says.

But high-end tools have their place, he says. For large, mission-critical applications where maintainance, performance and scalability are top concerns, "users had better invest more in the technology and worry less about ease of use. Because in the end, high-end tools will deliver reliable applications with fail-over and high availability that you just can't get with any of the lower-end tools," Hendrick says.

For bread-and-butter applications such as accounting, sales, manufacturing and inventory, which made up most of the mix cited by respondents, "Visual Basic, [Borland International, Inc.'s] Delphi and PowerBuilder work just fine," Hendrick says. And the "B" (representing "good") given as the average grade by the 156 users for their overall satisfaction indicates the performance-for-usability trade-off was worth it for them.

An analysis of the grades awarded to the more popular tools follows. The tools with the highest user satisfaction ratings are listed first.

DELPHI

Last year, with barely a year under its belt in the client/server development tools market, Delphi ran away with the top satisfaction ratings. Its users, including many who turned to Delphi after they had tried other tools, said Delphi won them over because it was the first tool to let them build fast, stand-alone applications that don't require runtime modules.

This year, Delphi Version 2.0 is on the market. And again, it scores the highest satisfaction grades with its users. But only six of the 156 users in this survey cited Delphi as their primary development tool. "Because [Delphi] is based on Turbo Pascal, and it's from Borland, most don't consider it mainstream or a safe bet," Hendrick says. So Delphi hasn't been as popular as some of its competitors, he says.

But even though Delphi has fewer users, they hold the same priorities as users of Visual Basic, PowerBuilder and Oracle Corp.'s Developer 2000. One of the top priorities named by all users was compatibility with existing applications. That's because most companies building enterprisewide applications are facing workflow issues. "There's a lot of existing data sources, and systems users want to link up or post information to [them] — compatibility is a big deal to everyone," Hendrick says.

Delphi features a library of SQL drivers for Oracle, Sybase, Inc.'s SQL Server, IBM's DB2 and Informix Software, Inc.'s Online. Other data sources supported by an Open Database Connectivity (ODBC) driver can be used with Borland's database engine facilities.

As a Windows 95 environment, Delphi has sufficient utilities for exploiting the operating system, users said. Delphi provides class encapsulations and predefined templates for building cooperating applications. Michael Rapier, a systems analyst at Corning Nichols Institute in San Juan Capistrano, Calif., uses Delphi and Visual Basic. He says Delphi is nearly on par with Visual Basic for Windows 95 controls.

Whether users find Delphi easy or difficult to use depends upon how well they know Pascal, Rapier says. A native Object Pascal compiler sits at Delphi's core, and Borland enhanced that compiler in this version with better error detection. The fact that you use Pascal's strict data-typing rules can make coding less problematic — and hence easier — because they don't let users make coding errors. But because learning curves were the toughest challenges users faced in their projects, and many users said it's what they try to avoid, users may want some Pascal expertise on their staff.

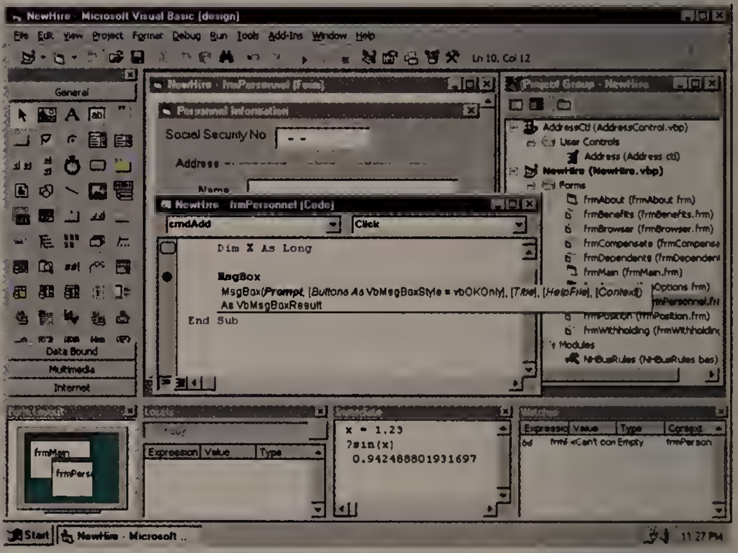
VISUAL BASIC

Visual Basic was the most popular environment among respondents. It is in use at 115 sites and is the primary development package at 50 of those. And ease of use was overwhelmingly cited by users as the top reason for their choice. Microsoft still hadn't added a code compiler to Visual Basic through Version 4.0. But the benefit of high usability appears to offset the relatively poor performance of its interpreted code for these users.

Version 5.0, which became generally available last week, reportedly includes a native code compiler, but none of the users in this survey had used it yet.

It was no surprise to Hendrick that compatibility with existing applications was at least the second most important factor in the users' decision. "Microsoft products have that effect on people — but with good reason," he says. Visual Basic includes plenty of data-sourcing controls that integrate with applications created on Microsoft's SQL Server and Oracle databases. Plus, an add-on called Remote Data Objects provides ODBC connectivity to a host of other data sources.

Users say be cautious about using Visual Basic as an environment for enterprise application development. "We're able to build good applications very fast with [Visual Basic], but that doesn't mean I would try and deploy them to 10,000 users. It wouldn't handle it," says Rick Cronce, director of systems development at Holstein Association USA, Inc. in Brattleboro, Vt.



```
Dim X As Long

MsgBox
MsgBox(Prompt, [Buttons As VbMsgBoxStyle = vbOKOnly], [Title], [HelpFile], [Context])
As VbMsgBoxResult
End Sub
```

```
x = 1.23
?sin(x)
 0.942488801931697
```

Plagued by the subpar performance of interpreted code, Visual Basic 4.0 remains popular because it's easy to learn and use, users say

But some users have hope. Akzo Nobel Coating, Inc. in Louisville, Ky., is developing a hazardous materials tracking database with Visual Basic and Oracle that will support 800 users when it's completed this year. The application is modular; each module will be used by a different office around the world but will be connected to one database. "Since it's a bunch of small applications acting as one, we're not expecting to have scalability problems," says Ray Pantess, a senior analyst at Akzo.

POWERBUILDER

PowerBuilder 5.0, Powersoft's updated release delivered last May, addresses many complaints users had about Version 4.0. For example, one Version 4.0 user cited the lack of a code compiler to improve script execution and the lack of OLE custom controls to let developers create OLE automation servers for access by other OLE-

What feature was most important in your organization's choice of an application development environment?

Ease of use	17%
Compatibility with existing applications	10%
Relationship with vendor	5%
DBMS compatibility	4%
Multiplatform support	4%
Performance of developed applications	3%
Price	3%
Scalability	3%

Percentage of responses. Base: 158

enabled applications. Even though those issues have been resolved, users still had enough issues with Version 5.0 that they couldn't grade their satisfaction much better than the lukewarm ratings they gave Version 4.0 last year.

But users say PowerBuilder's ease of use is what kept them with the tool, and Version 5.0 has made strides to further improve its usability. Drop-down lists for PowerBar, PainterBar and StyleBar items were added to the interface to speed up developer productivity, says Gary Hayes, a consulting analyst at SPS Payment Systems in Riverwoods, Ill. "Your most-used tools can be organized right on the desktop," he says.

Powersoft added prebuilt, reusable and extendable objects to its Foundation Class Library. Users who can't find the appropriate piece of code in Version 5.0's collection of sample applications can customize the objects and services in this library.

Even coordinating team development is easier with Version 5.0's ObjectCycle version control system. Version 4.0 used Intersolv, Inc.'s PVCS, which worked well, Hayes said.

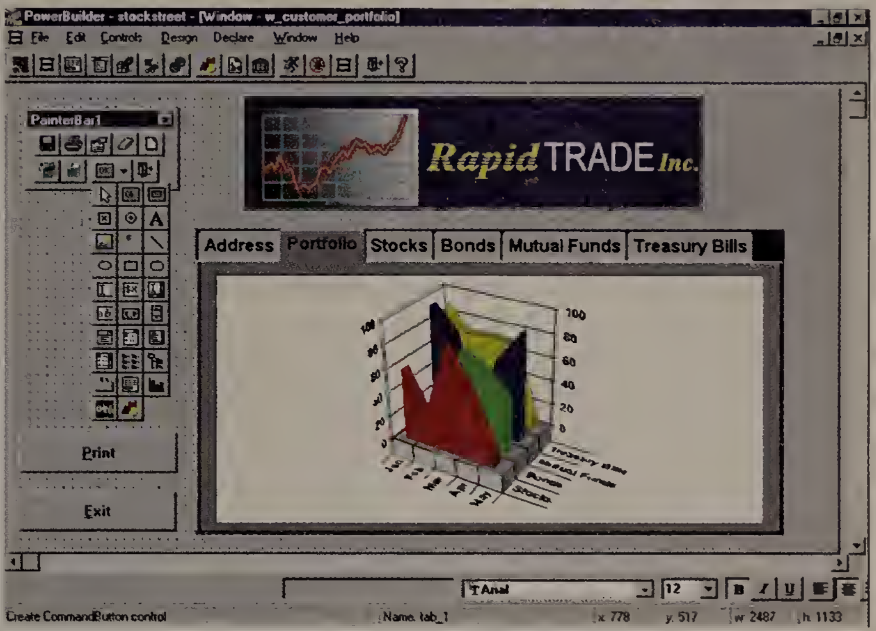
But ObjectCycle's Windows 95 Explorer-style interface, drag-and-drop commands and integration with PowerBuilder is easier to use and a better fit.

Distributed computing support is new to PowerBuilder 5.0, yet it was the second most important reason its users said they chose it. In fact, PowerBuilder users were alone in naming distributed computing among their top reasons for choosing their development environment. Also new is the ability to compile native code, which improves an application's performance. But several users said the improvement is barely noticeable in many situations, and it affected how they graded their overall satisfaction.

And Version 5.0 has required several version fixes to remedy several problems, and that further affected users' overall satisfaction grades.

DEVELOPER 2000 AND SQL WINDOWS

The last two development environments mentioned by more than a half-dozen users were Oracle's Developer 2000 and Centura Software's SQL Windows. Neither was strongly represented by users naming them as primary development environments, but the few who did graded their satisfaction lower than users of other environments. Those using Developer 2000 named its multiplatform capabilities as the most important reason for choosing it. But nearly as important was users' standing relationship with Oracle and existing applications based on Oracle's DBMS. "We looked at [Visual Basic] and PowerBuilder, but ultimately, our past investment in Oracle made the decision for us," says Patrick Ryan, a senior programmer at Lease Insurance Agency Services, Inc. in Bellevue, Wash. This makes three consecutive years that Centura's SQL Windows came in last in customer satisfaction. Its users said their association with the vendor is what kept them with SQL Windows, which is among the oldest development environments on the market. Centura will continue to enhance SQL Windows, but its users don't expect a major overhaul soon. Centura's new flagship product, a high-end environment released a year ago called Centura Team Developer, is getting much of the vendor's attention. ☐



PowerBuilder 5.0 remedies many of Version 4.0's inadequacies and adds features such as the drop-down PainterBar menu (above), but user satisfaction didn't show the same level of improvement

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Burden is Computerworld*'s senior researcher, Scorecard/Firing Line.*

THE SURVEY SAYS ...

When *Computerworld* surveyed 156 organizations regarding the tools they use to build enterprise-class applications, respondents listed more than two dozen products or core technologies as key development tools. Those most commonly cited as either primary or secondary tools were Microsoft's Visual Basic (115 mentions), Powersoft's PowerBuilder (66), Oracle's Developer 2000 (48), Centura Software's SQL Windows (19) and Borland's Delphi (18). All others listed here were mentioned by three managers or fewer. The following is a run-down of tools cited by respondents, along with summaries from industry publications and press releases:

Microsoft Corp.

Redmond, Wash.
www.microsoft.com

Visual Basic

Microsoft announced Visual Basic 5.0 in February and claimed greater scalability in its Enterprise Edition, and new Internet and productivity enhancements in the Professional Edition.

Visual C++

Version 5.0 of Visual C++ was scheduled for delivery this month. Like Visual Basic, it will be offered as part of Microsoft's Visual Studio 97, a bundle designed to help users build multilanguage and multitiered applications.

Visual FoxPro

Microsoft is promoting better performance as a key differentiator in the new Visual FoxPro 5.0. The company also says Version 5.0 will feature better project management and support for multiple developers.

Powersoft

Concord, Mass.
www.powersoft.com

PowerBuilder

"Powersoft's major upgrade to its flagship development system finally moves it into the rarefied realm of enterprise-class development environments and out of the confines of workgroup and departmental tool sets." — *Computerworld,* June 3, 1996

Powersoft, a unit of Sybase, Inc., released PowerBuilder 5.0 last year and promoted it as an environment for quickly building powerful applications that can be widely deployed. PowerSoft also offers Optima++ as a rapid application development tool and S-Designor for database-oriented development.

Oracle Corp.

Redwood Shores, Calif.
www.oracle.com

Developer 2000

"Of the three enterprise development tools we tested, Oracle's Developer 2000 best withstood the strain of expansion." — *InfoWorld, June 17, 1996*

Oracle offers Developer 2000 as a tool for building applications that scale from the workgroup to the enterprise. Oracle also offers Power Objects as a desktop and workgroup-level development tool.

Designer 2000

The second major part of Oracle's development strategy, Designer 2000 is intended for use at the modeling, design, analysis and business process re-engineering stages.

Centura Software Corp.

Menlo Park, Calif.
www.centurasoftware.com

SQLWindows

SQLWindows helps developers create client/server applications that can connect to multiple databases, Centura says.

The survey says, page 92

THE SURVEY SAYS ...

CONTINUED FROM PAGE 91

Borland International, Inc.

Scotts Valley, Calif.
www.borland.com

Delphi

Delphi has won more than two dozen awards since its introduction in February 1995. The vendor attributes this to the tool's native code compiler, visual two-way tools and scalable database technology.

"Whatever the approach lacks in RAD-like ease and elegance, however, is made up for by the speed and flexibility of the deployed site. Delphi now incorporates support for both [Internet Server Application Programming Interface] and [Netscape Server Application Programming Interface], in addition to [Common Gateway Interface]. That, along with Delphi's ability to generate [Dynamic Link Libraries], gives you enormous versatility and plenty of performance." — *PC Magazine*, Sept. 10, 1996

Borland C++

Version 5.0 Borland's C++ Development Suite includes four time-saving tools needed from prototype to deployment, according to the vendor.

"Borland has blended the visual metaphor that Basic programmers have had with the C++ language to make a robust and comprehensive environment. It lets developers quickly build scalable projects by taking advantage of C++'s efficiency and organization." — *Computerworld*, Jan. 20, 1997

Paradox

On Oct. 21, 1996, Borland and Corel Corp. in Ottawa announced that Corel will license, develop, support, market and sell Paradox. Borland will sell stand-alone versions of Paradox until Oct. 21, 1997.

Forte Software, Inc.

Oakland, Calif.
www.forte.com

Forte

According to Forte Software, its Forte application environment increases productivity by shortening the application development process, improving the quality of the complete applications and enabling reliable operations in distributed computing environments.

Passport Corp.

Paramus, N.J.
www.passport4GL.com

Passport

Passport combines an object-oriented fourth-generation language with visual programming tools, making it possible to create scalable applications. Developers can choose between using visual programming tools or a text editor. Version 8.2 is currently available.

"This tool offers an easy entrance into three-tier systems and can be considered a valuable alternative to high-end tools, such as Forte and Dynasty. The application development environment reflects the ever-changing complex environments created by users and organizations. Passport's fully extensible and open language ensures its capability to handle the most complex applications." — *Data Based Advisor*, August 1996

Late last year, Passport introduced Passport IntRprise, which supports intranet, Internet and Java development.

Nat Systems International, Inc.

McLean, Va.
www.natsys.com

Natstar

Supporting the entire application life cycle, NatStar is a transgenerational application development technology, according to the vendor. It offers support for multiple development methods, native environments, protocols and databases.

Neuron Data, Inc.

Mountain View, Calif.
www.neurondata.com

Elements

One respondent reported using Neuron Data's Smart Elements Object rule-based expert system package. Neuron Data last year announced Elements Environment 2.0, which it promotes as a development environment designed to build portable enterprise and intranet applications using diverse objects.

Dynasty Technologies, Inc.

Lisle, Ill.
www.dynasty.com

Dynasty

Focused on building highly reusable business objects for distributed enterprise-class applications, Dynasty creates highly graphical, distributed, midsize to very large scale and functionally complex applications, according to the vendor. Applications are developed independently of the applications upon which they will run.

Compuware Corp.

Farmington Hills, Mich.
www.compuware.com

Uniface

Application development, deployment and delivery are supported by Uniface, a development environment for constructing complete, business-critical applications. Last October, Compuware announced Uniface Seven, the first major upgrade since Compuware acquired the product in 1994.

Lotus Development Corp.

Cambridge, Mass.
www.lotus.com

Domino

Lotus officials say Domino converts Notes into an Internet application server, making it possible to create World Wide Web applications by translating Notes constructs into Hypertext Markup Language.

CodeWorks, Inc.

Chicago
www.codeworksinc.com

Enfin

CodeWorks offers an Enfin programming and application tool set. The programming tool set includes a load-application tool, trace utility, class builder and class sort utility. The application tool set includes three-dimensional bar charts and a pop-up calendar, providing enhanced interfaces for end users.

IBM

Armonk, N.Y.
www.ibm.com

IBM C++

IBM's C++, now supported by VisualAge, combines visual programming with robust professional development tools and a comprehensive set of object building blocks in the IBM open class library, according to IBM.

IBM RPG

Now available in Version 3 Release 7, VisualAge for RPG is part of the Application Development ToolSet Client/Server for AS/400 product.

Software AG

Darmstadt, Germany
www.softwareag.com

Adabas D

A database system that implements the relational model, Adabas D supports domains, primary keys, updatable join views, referential integrity, triggers and database procedures, according to the vendor. SAP AG selected this system for its R/3 commercial application system.

UP TO THE MINUTE

The following announcements and other news items from the application-development field were released during February and March:

Borland shipped its C++ Builder rapid application development environment and announced plans for Delphi 97 (second quarter) and JBuilder (third quarter). — *InfoWorld*, March 3.

Visix Software, Inc. in Reston, Va., announced plans to expand its C++ development tools into the Java arena. — *Computerworld*, Feb. 24.

Microsoft shipped Active Directory Services Interface kit, which was designed to help developers build cross-platform applications using Microsoft's upcoming Active Directory. — *Computerworld*, Feb. 17.

Microsoft announced Visual Studio, a bundle of Microsoft development tools and a first step toward an integrated tool set. — *Computerworld*, March 10.

Oracle licensed Java and C++ technology from Borland and plans to embed it in its Designer 2000 and Developer 2000 lines. — *Computerworld*, Feb. 10.

Vision Software in Oakland, Calif., announced Vision Builder Developer's Release 3.0 with support for Microsoft Visual Basic 5.0, Microsoft SQL Server and Microsoft Transaction Server.

Compuware announced general availability of its Uniface Seven development environment that features new application partitioning and modeling capabilities.

Borland shipped its Delphi/400 development suite for the IBM AS/400.

Computer Associates International, Inc. in Islandia, N.Y., shipped Visual Objects 2.0, its tool set for building 32-bit Windows applications. CA says Visual Objects is compatible with most existing XBase code and features replaceable database driver technology.

Twenty-three companies announced support for the Microsoft Repository, co-developed with Texas Instruments, Inc. in Plano, Texas, and scheduled for release with Visual Basic 5.0. The repository is intended to help corporate developers track and store reusable pieces of code.

Texas Instruments released Version 4.0 of its Composer environment, adding rapid component development.

Software AG announced a developer's kit designed to help objects wrap legacy applications in a client/server environment.

Forte announced Forte Conductor, a new production workflow product for building high-performance workflow-style applications.

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3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

   Operating Systems
   - (a) Solaris
   - (b) Netware
   - (c) OS/2
   - (d) Unix
   - (e) Mac OS
   - (f) Windows NT
   - (g) Windows
   - (h) NeXTstep

   App. Dev.Products ☐ Yes ☐ No
   Networking Products ☐ Yes ☐ No
   Intranet Products ☐ Yes ☐ No
4. Which of the following products do you buy, specify, recommend or approve the purchase of? (Check all that apply.)
   - (a) ☐ Internet software
   - (b) ☐ Internet browsers
   - (c) ☐ Web authoring/development tools
5. Do you use the Internet?
   ☐ Yes ☐ No

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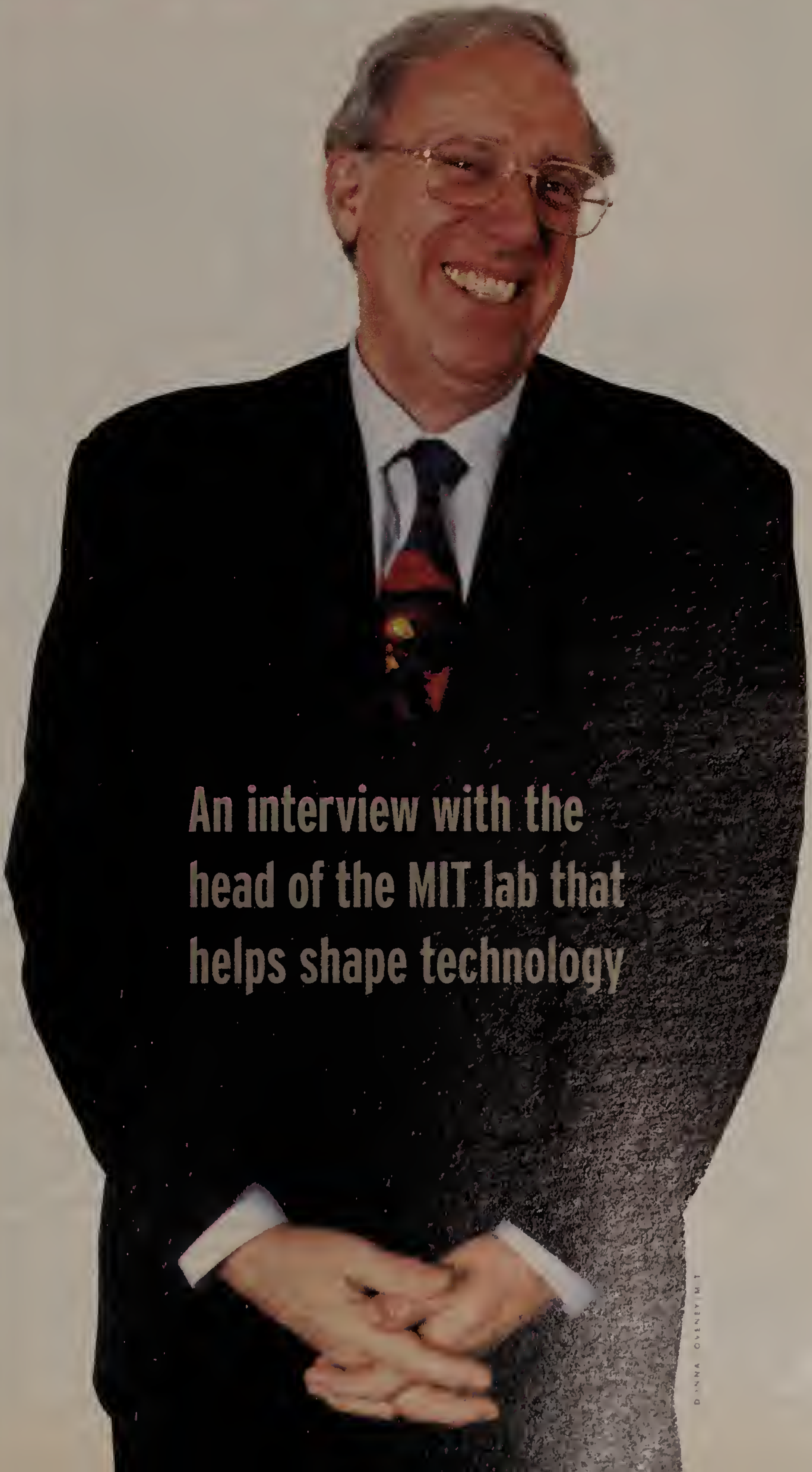
In Depth

What will be

Michael Dertouzos has been director of MIT's Laboratory for Computer Science in Cambridge, Mass., since 1974. During that time, the lab has been a key player in the development of technologies such as Ethernet, spreadsheets and parallel processing. The lab is now helping to set Internet standards through its 150-member World Wide Web Consortium.

His long tenure at the lab and his impressive track record with technology predictions make Dertouzos a likely candidate to write a book that peers in to the future of information. He recently sat down with Steve Alexander to discuss the new book, *What Will Be: How the New World of Information Will Change Our Lives.*



An interview with the head of the MIT lab that helps shape technology

DONNA COVENEY/MIT

CW: What is your "Information Marketplace" concept?

DERTOUZOS: The Information Marketplace is collection of computers and the people behind them that do three things: Buy, sell or exchange information and information work (the massaging of information.)

Today, you can't sell information widely. Money is not flowing over the system in the way we envi-

What will be, page 94

What will be

CONTINUED FROM PAGE 93

sion. We have to make sure that payments are handled in a routine and straightforward way. And then there are issues of privacy and security. That's very spotty today, and there's no uniformity.

The Information Marketplace is not the World Wide Web Plus. It is going to be the follow-on to the Web, although it will take 10 to 20 years to get there.

Today, there are 30 million to 40 million people on the Web — although many are on intranets that are isolated. I expect 500 million to 1 billion interconnected machines by 2007. The Information Marketplace will touch or affect $9 trillion in the global economy.

The other thing is that nondollar information will be freely exchanged. A good example is the Virtual Peace Corps, a gigantic want-ad clearinghouse where people who want to give help come together with people who want help worldwide.

DONNA COVENEY/MIT

"Outsourcing is a fad, and people will wake up to the nightmares of outsourcing after they've tried it for a while."
Michael Dertouzos,
MIT Lab

CW: In your book, you talk about middleware modules. You use the term "middleware" differently than most people use it today. What are middleware modules?

DERTOUZOS: Shared tools or programs. A lot of it will be shrink-wrapped, and a lot will be done by companies like Ford for their own facilities.

Imagine a table where rows are sectors of the economy — rubber manufacturing, metal parts manufacturing, health and so on. There are thousands of rows.

The columns of the table are the types of meetings, or group work, that these people have. When a dozen or more people are around a table, that's a Type 1 meeting. Type 2 is a meeting in an auditorium, and Type 3 is pointing at something to show a diagram or a patient in surgery. So maybe there are 20 types of meetings.

At every intersection in the table, I envision several pieces of middleware that will be useful to those people — industry-specific, category-specific software that serves very useful purposes. These middleware modules mediate between people or between machines and people, but they are not intelligent agents. This is what a lot of independent software vendors will be producing in the years ahead.

CW: What should today's programmers do to get in on the middleware module opportunity?

DERTOUZOS: I think the Web is the way to start. Programmers ought to start studying Java and asking themselves what they can do that would help relieve human work by automating activities, what they can do to help improve the quality of work taking place. If they are not going toward automation, but toward group-work modules for security or payments, then they need to learn a lot about this business and what is meant by privacy and security.

CW: You mention that middleware will create new software industries. Will the arrival of middleware be as revolutionary as the rise of Web companies?

DERTOUZOS: It's going to be huge.

In the first few decades of the computer field, we developed software that was all generalist programs — accounting, music, business, medicine, word processing and database programs. Now I see us shifting to a world where programs are going to be imbued with a lot more meaning for the specialty they are supposed to serve.

This will be a boon for the software industry because there will be 500 million to 1 billion computers needing software.

CW: You see the Information Marketplace changing where people live and work. For instance, you predict "work centers" that would move workers to the suburbs but not into their homes. How would such changes affect employees?

DERTOUZOS: If it is possible, people may work three to four days a week at a remote location, and then spend one or two days a week commuting to shared locations. But they cannot stay in isolation. You can't build trust that way. There will need to be a certain time in which people are face to face.

There are people who want to work at home, and there also are people who want to go to a place where the cat is not rubbing against them and they are not being constantly diverted by other things. Or they may need the facilities of a work center. Suppose they work with high-quality graphics or video. A company can't afford to give this to 100,000 employees at their homes, but they can concentrate it in some area.

CW: You write that in the future, information technology will be dealt with by nearly every employee — not just by CIOs and their staffs. If that's true, what will the IS organization of the future do?

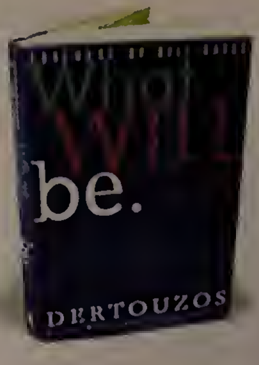
DERTOUZOS: The future of the IS organization and CIO is one job: to manage, develop, worry about and take care of the company's shared information resources. Those resources are hardware the whole company counts on, the network and the protocols sitting on top of the network. IS also must manage unique shared resources. For instance, does the company have a common personnel record or common receivables, payables and ledger?

The picture to carry in your mind is that while there will be tremendous growth of individual involvement in computers, software and information, there also will be growth in shared information activities. And if information is shared, it belongs to the shared group — which is the IS department.

CW: You seem to like the idea of specialization, but you specifically recommend against outsourcing IT. Why?

DERTOUZOS: Maybe you can find a company that can do your payroll cheaper. But if you view [IS] as the nerve center of your company — that guides and is guided by you to give you a competitive advantage — then it is linked to every activity of your company. If you outsource it, you'd better outsource all those linkages. But typically, companies don't do that. They know they can't outsource it and expect it to connect to 2,000 places in the organization.

Outsourcing is a fad, and people will wake up to the nightmares of outsourcing after they've tried it for a while — unless it's a very simple job.



What Will Be: How the New World of Information Will Change Our Lives

By Michael Dertouzos

Foreword by Bill Gates.
Published by HarperEdge, an imprint of HarperSanFrancisco, San Francisco, Calif.; 1997; 336 pages; $25 (hardcover)

CW: You mention that the global reach of information will aggravate tensions that arise from cultural friction. Can you explain why this will happen?

DERTOUZOS: Just look at the French. They don't like American culture imbued in to their children through movie channels. But the Internet goes internationally, without checkpoints. French kids see American sites and acquire terrible habits (laughs) — in the eyes of their French parents. And if you think France and America aren't too close, go to China or Singapore.

We should respect the cultures of individual nations. We can't use the Internet as an excuse to impose cultural change on the world.

Tomorrow's Information Marketplace will impose a thin cultural veneer on the cultures of the world. It will not be a massively shared culture, but a thin veneer of conventions we all agree are common, and each country will retain its indigenous cultures. There will be cross-national agreements for transgressions.

CW: Is there a dark side to the Information Marketplace?

DERTOUZOS: Like any other technology, this one makes possible a dark side.

If the Information Marketplace makes us closer to each other, it will be easier for people to steal from you, trick you, impersonate you, find out secrets, blackmail you. There will be a lot of infocrime.

Left to its own devices, this information revolution will increase the gap between rich and poor. It should not be left to its own devices. ☐

Alexander is a freelance writer based in Minnesota.

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IT Careers

DELICIOUS DEVELOPMENTS

By Leslie Goff

"Worked with Visual Basic, PowerBuilder or C++ lately? Have I got a deal for you. . . ."

If you have any experience with packaged client/server development tools and the full project cycle, combined with the slightest hint of interpersonal skills, now is your chance to tell potential employers, "Show me the money."

ROBERT PIZZO

Corporate information systems departments, outsourcing firms and IS training companies are desperately competing for the limited pool of IS professionals who have sufficient hands-on, real-world expertise in this relatively nascent software.

At the desktop, Microsoft Corp.'s Visual Basic, Powersoft's PowerBuilder, C++, Java and SQL database packages are in high demand. At the enterprise level, SAP AG, PeopleSoft, Inc. and Oracle Corp. financials remain the most sought-after skills, with full-scale development environments from The Baan Co. and others moving up the list.

A spike in the already-rapid rate of technological change, combined with the urgency of year 2000 conversion efforts, is "fueling the demand for high-caliber talent to lead the way forward," says Mike Sinenck, vice president of cross-industry integration services at IBM Global Services in Somers, N.Y.

Faced with a skills shortage, IS departments are increasingly looking for qualified business professionals who have experience in critical functions and the capacity to go deeper into technology. For example, Price Waterhouse Consulting Services has an initiative under way to hire 150 people who have two to three years of auditing experience. The company will train them in SAP, PeopleSoft or Oracle financials.

"We can't find people with those skills, and we also need business-process experts," says Liz Corey, associate director of the national recruiting group at Price Waterhouse in Tampa, Fla. "So we have different profiles that we seek. In IS recruiting, you can never find every attribute you want. You have to settle to make the grade."

KEEPING PEOPLE HAPPY

Companies also are refocusing on creative retention strategies to counter downsizing's major backlash — fickle employee loyalty. For example, training benefits are making a big comeback. IS professionals can leverage demonstrated participation on teams, functional experience, soft skills and technical proficiency to receive client/server training from employers or to earn bonuses for getting trained on their own time.

TOP TOOLS OF THE TRADE

IS hiring mangers say they will pay high salary premiums to workers with experience in development tools — their highest-priority skill this year

Development tool	% hiring for the skill	Salary premium paid for the skill
Visual Basic	**24%**	**6%**
PowerBuilder	**13%**	**11%**
Visual C++	**9%**	**11%**
Oracle Developer/2000	**8%**	**13%**

Source: *Computerworld's* 1996 Annual Skills Survey of nearly 900 IS hiring managers

Corporate IS departments and outsourcing firms are reevaluating their compensation strategies. They are adding big percentages to the base pay to draw and retain client/server development talent.

"Having worked on a full-cycle development project in client/server can bump your salary as much as 20%," says David Foote, program director of the Executive Council Service at Meta Group, Inc. in Stamford, Conn. "And companies are paying even bigger premiums to people who have been part of a cross-functional team of IS and business unit staff and have demonstrated that they don't turn off end users. That kind of experience is priceless."

PECO Energy Co., an electric utility in Philadelphia, recently revised its compensation structure. It flattened its seven IS job classes into five broader categories: associate consultant (for college hires), consultant 1, consultant 2, consultant 3 (a technical track position) and manager (the management equivalent of consultant 3).

The company employs a mix of internal IS staff and consultants. Joseph Awe, director of strategic technologies at PECO, says local competition, which presents challenges for recruiting and retention, caused the IS department to employ a compensation formula that is different from the utility's other units.

"We wanted to stay competitive to the Philadelphia marketplace, whereas before, we were pegged to a utility standard that was not conducive to attracting IS professionals," Awe says. "So we made our job classes broad enough that they would compare to other consulting organizations, and then we could market-price the salary range."

After adjusting the base salary to the market, PECO now considers awarding potential IS employees a hiring bonus as well as a hot-skills bonus, figured as a percentage of base pay.

The demand shows no signs of abating during the next 18 months to three years, a fairly large window of opportunity in IS, observers say.

"In all industry segments, users need information on a dime," says Steve Lecatta, manager of New York operations at Source Services Corp., an IS recruiting and contracting

Delicious developments, page 99

Sr. Operations Research Analyst Analyze, design, and develop optimization models for yield management using statistical analysis, linear and nonlinear mathematical programming in C and C++ programming languages, time series forecasting, simulation techniques and relational databases. Master of Science degree required in Operations Research or Operations Research Intensive Curriculum plus 1 year of experience in the job duties described above. Graduate research project work will be acceptable to satisfy experience requirements. Salary: $44,261/year for a 40 hour work week. Apply at the Texas Workforce Commission, Fort Worth, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, JO# TX7858230. Ad paid by an Equal Opportunity Employer

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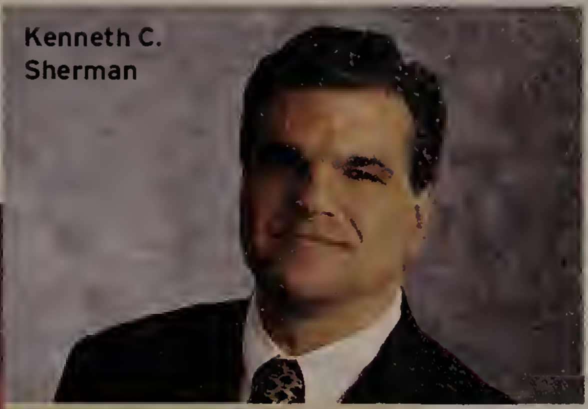
Kenneth C. Sherman

Carmine J. Villani

Steven Junk

DAN SJOSTROM

Patricia L. Higgins was named a first vice president and chief information officer at Aluminum Company of America in Pittsburgh. She has held executive positions at Unisys Corp., Nynex Corp. and AT&T Corp.

Kenneth C. Sherman was named the first CIO and manager of information technology at Enhance Financial Services Group, Inc. in New York. The firm provides financial guaranty insurance and reinsurance. Sherman was previously director of corporate finance at Marine Midland Bank.

Eugene E. Wojciechowski was named CIO at Fritz Cos., a global transportation and logistics company in San Francisco. He was previously vice president of information systems at USL Capital Corp. in San Francisco.

Frederick G. Pinto was named vice president of global technical services at Memco Software, Inc., a New York security software developer. He was previously a vice president of information security services at J. P. Morgan & Co. in New York.

Robert K. McNeal was named senior vice president and chief operating officer at Entertainment Drive, a New York-based online entertainment company. He was previously director of special projects for IS at Time Warner, Inc. in New York.

Carmine J. Villani was elected a corporate vice president and CIO at McKesson Corp. in San Francisco, a distributor of pharmaceutical and health care products. He worked at IBM for 27 years before joining McKesson in 1992.

Doyle Baker was named CIO at Power Computing Corp. in Round Rock, Texas. He previously was vice president of information resources and CIO at Mentor Graphics in Wilsonville, Ore.

Bernard Miller was named a vice president and CIO at Diamond Multimedia Systems, Inc. in San Jose, Calif. He was previously director and CIO at Global Village Communication, Inc. in Sunnyvale, Calif.

Al Pappas was recently named CIO and vice president of MIS at VeriFone, Inc., a provider of electronic payment solutions in Redwood City, Calif. Pappas was previously responsible for overall direction and strategic planning of worldwide operations at Adobe Information Services.

Steven Junk was named vice president of IS at Sears Automotive Group, a division of Sears, Roebuck and Co. in Hoffman Estates, Ill. He will oversee IT strategy and development of communications systems for the retail chain's tire and automotive operations.

Robert G. Conover was named a senior vice president and CIO at Hilton Gaming Corp., a division of Hilton Hotels Corp. in Beverly Hills, Calif. He joined Hilton in 1993.

Alan Pedersen was promoted to senior vice president and director of planning, finance and IS in the consumer banking division at Dime Savings Bank of New York in Uniondale, N.Y. He was previously the bank's manager of IT, electronic banking and finance for consumer banking.

Scott Lipsky was named vice president of business expansion at Amazon.com, an Internet-only bookstore based in Seattle. He was formerly CIO at two divisions of the Barnes & Noble Bookstores chain in New York.

Vivian M. Stephenson, senior vice president and CIO at Dayton Hudson Corp., was named to the board of directors at MobiNetix Systems, Inc. in Sunnyvale, Calif.

DELICIOUS DEVELOPMENTS

CONTINUED FROM PAGE 97

firm. "They don't want data. They need answers — and now. Marketing makes pricing decisions based on small details. An apparel maker pays too much for buttons and consequently loses money. This is the kind of thing that is forcing all companies to have better and better information at the desktop," Lecatta says.

Qualified applications developers who have packaged tools experience can carve out a variety of roles, from project leader to end-user liaison, and can create their own career paths, whether management or technical.

As corporate IS reemphasizes employer-sponsored training as a means of offering incentives and meeting internal demands, a viable new career track is emerging for certified applications developers. Gabrielle Ivey, director of corporate training at Chubb Computer Services' Philadelphia region, says Chubb actively seeks IS professionals who possess real-world experience in PowerBuilder, C++ and the major SQL databases and can train and motivate others.

"It's very hard to find qualified instructors who have actual experience," Ivey says. "Students are hungry for examples of what people are encountering in the field. So where we used to look for people with education and training backgrounds, now we look for people who have programming backgrounds and can ... describe real situations and complex technical information without talking over the students' heads."

ExecuTrain Corp., a national technical training firm in Atlanta, launched a client/server training practice in 1995. It has already hired 260 full-time instructors and a network of contractors. "We still can't seem to meet the demand," says Kevin Brice, ExecuTrain's vice president and general manager of technical training. "It's a seller's market in terms of qualified instructors." ☐

Goff is a freelance writer in New York.

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Tutorial: Building Client/Server Applications Using PowerBuilder
hsb.baylor.edu/~vaughnr/cover.htm
An excellent online how-to site for PowerBuilder.

PB Newbie: Ashok's Website for PowerBuilder Beginners
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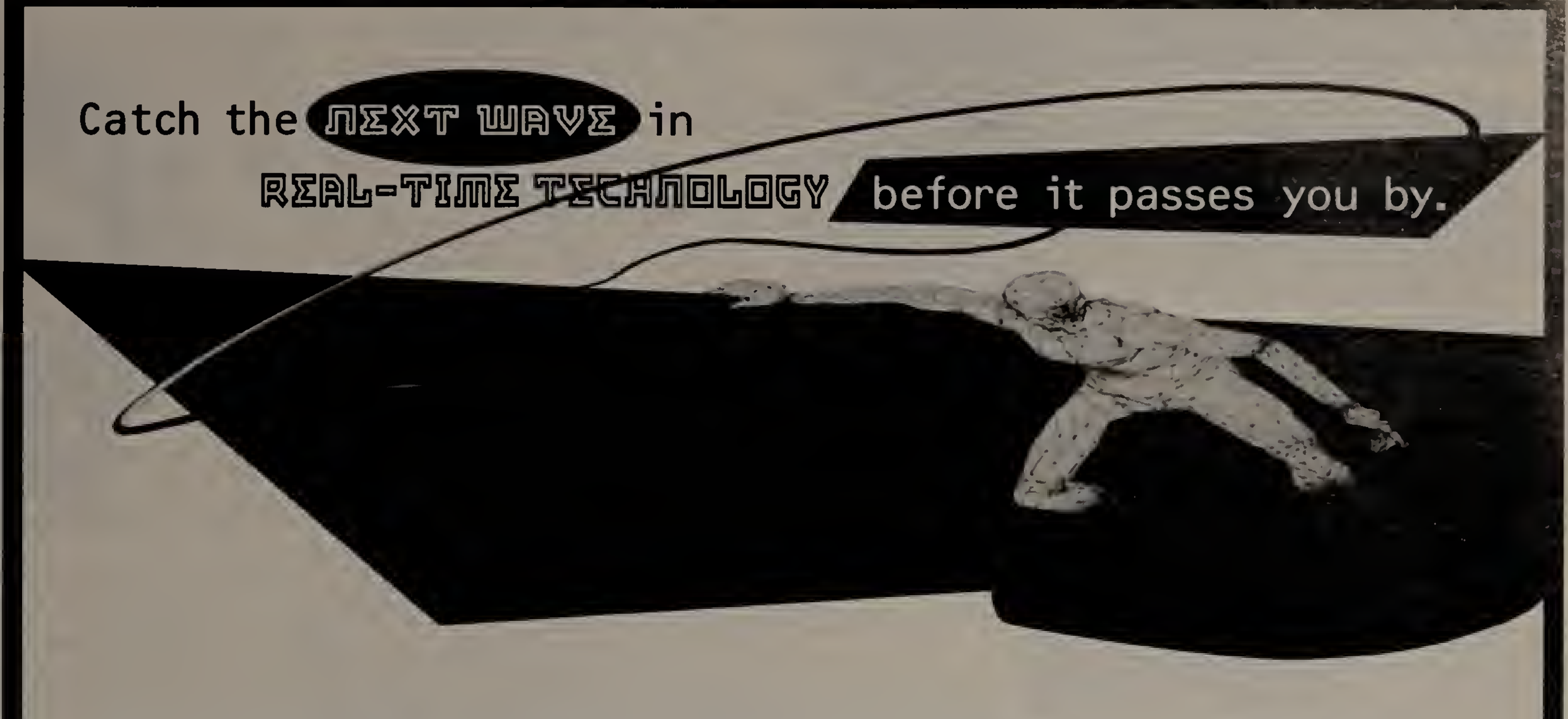

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FAX (540) 665-5320
EOE M/F/D/V**

Client/Server, Unix Applications Development Team Leader

Tallahassee, Florida, is 30 miles from the Gulf of Mexico and offers majestic oaks, clean air, a low cost of living, and beautiful weather year round combined with a high energy collegiate and public sector work environment. If you are interested in an improved quality of living, and in challenging application development opportunities, please consider the following:

The Florida Office of Planning and Budgeting, Systems Design and Development Unit, is offering an exciting position as a key team leader responsible for overseeing and contributing to the development and implementation of Unix/Oracle/NT/Win95 based three tiered and/or Web enabled planning, budgeting, and appropriations applicetion systems for the state of Florida. New application systems will use a three tiered client/server architecture, Groupware, Data Marts, OLAP, Multimedia Voice/Video, and AI/ES facilities.

The anticipeted starting salary will be up to $65,000 annually based upon your knowledge and experience level. You must have a minimum of three years of experience leading the design and development of Unix/Win32, Client/Server based application systems, a minimum of two years of supervisory experience, and strong writing and speaking skills

The successful cendidate will have five or more years experience with the following Client Server technologies as an application developer: ODBC and/or DCE/RPC facilities and functions, PL/SOL, Unix, Win32 programming, Visual Basic, Windows 95, Windows NT, Microsoft COM/OLE/ActiveX, and C/C++.

It you would like to join a team of professionals in the public sector who ere dedicated to providing a broad range of High Performance Information Technology services to their customers in an exciting and beautiful environment, please submit a resume and cover memo to Mr. Toni Marinelli et the eddress below:

Office of the Governor, Personnel Office
The Capitol, Room LL05
Tallahassee, FL 32399-0001
Telephone No (904) 488-4505 • Fax# (904) 922-9002

The application deadline for this position (Number 00311) is April 4, 1997. The resume end cover memo must be received by 5:00 p.m. of the above date

If you need an eccommodation beceuse of a disability in order to participate in the application/selection process, please notify the Personnel Office in advence

EEO/AA EMPLOYER

NORTH CAROLINA OFFICE OF THE STATE CONTROLLER

STATE INFORMATION PROCESSING SERVICES

CENTRALIZED COMPUTING SERVICES DIRECTOR

Salary Range -- $57,593 to $97,440

The North Carolina Office of the State Controller has opened a nationwide search for qualified applicants with extensive knowledge and skills in the management of a large centralized computing center.

As part of the State Information Processing Services (SIPS), a division within the Office of the State Controller, Centralized Computing Services provides centrally-based, shared computing for state agencies and institutions. Over 32,000 devices are connected to a variety of computers housed within CCS. Major hardware includes an IBM ES/9000 model 9X2 mainframe, two CMOS processors (a 9672-RX3 and a 9672-RY4), several major UNIX processors, over 3 terra-bytes of DASD storage, and several STK Silos.

Consisting of three major branches (Systems Programming, Computer Operations, and Capacity and Performance Management), CCS works to provide efficient processing for client agencies at low cost through effective management and use of hardware and software alternatives.

The Director of Centralized Computing Services will provide leadership and direction in planning, developing. and administering statewide policies, standards, and guidelines pertaining to centralized computing services. The individual hired must possess extensive knowledge in the aforementioned area and be acutely aware of emerging technology as well so strategic and long-range planning can be accomplished. The individual hired will oversee three (3) branch heads who supervise approximately 100 employees engaged in the statewide delivery of service. The CCS Director reports to the Director of SIPS.

The successful candidate must hold a baccalaureate degree in business administration, computer sciences, or data processing with at least eight (8) years of mainframe data processing experience, including four (4) years of managerial experience in planning, directing and negotiating mainframe computing services with an emphasis on systems software programming; or an equivalent combination of education and experience. Requisite knowledges include those relating to the capabilities and limitations of a wide range of computing equipment and services. Candidates must also demonstrate managerial proficiency through acquired experience to include budget development and administration, resource allocation, and personnel management. Management prefers candidates with current experience managing a large scale data center running MVS Parallel Sysplex and UNIX. Management prefers a degree in business administration, computer sciences, or data processing.

To reply, submit a State application to **Office of the State Controller, 3512 Bush Street, Raleigh, N.C. 27609, Attention: Personnel Services**. The State application may be downloaded at **www.osp.state.nc.us/OSP** or you may cell **(919) 981-5035** for assistance.

The North Carolina
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SYSTEMS ANALYST to analyze, develop, implement and support real-time expert systems, neural networks, and database applications with graphical user interfaces for engineering and business applications using Level 5 Object, BASIC, C, C++ and dBASE III under DOS, MS Windows and UNIX operating systems on IBM compatible PCs and Sun workstations. Require: B.S. in Artificial Intelligence and two years experience in the job offered. M.S. degree in Artificial Intelligence with a demonstrated ability to perform the stated duties gained through previous work experience/academic coursework will be accepted In lieu of the B.S. degree and two years of experience. 50% travel to client sites within the U.S. is required. Salary: $42,000 per year, 8 am to 5 pm, M-F. Apply in person or by resume to: Georgia Department of Labor, Job Order # GA 6077020, 1535 Atkinson Road, Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

SENIOR ENGINEER, for Global Product Rules Development. Will develop, publish and maintain provisioning and configuration rules for telecommunication digital multiplex switching system, for use by automated engineering tool development and customer engineers. Comply with International Standards Organization (ISO 9001) procedures of GPRD and maintain certification. Salary $45,685.12. Hrs. 40 wk. Requires a B.S. C.S. or E.E. and 5 years of experience with digital multiplex switching systems, including engineering, with in-depth knowledge of switching architecture, provisioning rules development in a switching environment and new product introduction processes. Please send resume to the NC Job Service at 742-F East Chatham Street, Cary, NC 27511 or to the job service nearest you. All resumes must include a social security number and refer to Job Order # NC5761005 and DOT code # 003.061-010

Systems Analyst. $42K/yr. 8a-5p. 40hr/wk. Analyze user reqmts, procedures & problems to automate processing & to improve existing systs, identify problems using skills in Visual Basic, C, C++, SOL, Object Windows, Btrieve & base products Clippers & dbase; & learn specific DP & OP reqmts like data input, write user description, pgrm function & specs. Must have Bach deg w/major in Comp Sci or Engg; or Technology. 2yr exp in job offer or in related occupation of S/ware engr or Consultant. The reqd 2yr of exp in job offd or in related occupation of s/ware engr or consultant should incl work using skills in Visuel Basic, C, C++, SOL, Object Windows,. Btrieve & base products Clippers & dBase. Job loc: Duluth, GA. Send resume or apply in person at: GADOL, JO#GA 6078303, 1535 Atkinson Rd, Lawrenceville, GA 30243-5601 or nearest Dept of Labor Field Service Office. EOE/AA employer.

SENIOR PROGRAMMER ANALYST: Design and development of Allowance Tracking System to calculate rebates and allowances to the company by its vendors based on sales data downloaded from an AS/400 system using stored procedures and UNIX shell scripts. Creation of reports using Oracle ReportWriter and PowerBuilder in a client/server environment. Allowance Tracking System is developed using Oracle Procedural Language PL/SOL, Functions Database Triggers, Database Links. Erwin Datamodeling designer is used for designing and maintaining the integrity of the system. Requires: MS in Computer Science or MIS. One year experience in Oracle programming in the development of database applications used in tracking systems. Demonstrated ability in UNIX shell scripts. PL/SQL, PowerBuilder and Oracle ReportWriter. 40 hrs./per wk (8:00 a.m. to 5:00 P.M.) $49,500,00/yr. Send two resumes/respond to Case #61774, Box 8968, Boston, Ma 02114.

Senior Consultant. Manage Client/Server initiatives for transportation applications using relational databases mgmt. system & geographic info. system technologies based on open systems architecture. Manage a team of info technolgy. professionls through the project development life-cycle incl. analysis, design, development, implmentatin & support phases.Develop & implement client/server applications w/open systems standards for transportation industry using Oracle & Sybase RDBMS, Oracle development tools, Oracle financial applications & Intergraph's MGE & GeoMedia aps. Req. Bach. in Comp. Sci & 5 ys exp in job or 5 ys as Project Leader. Job/Intvw Site:Jackson,Miss.. $65,000, year. 40 hr. wk Apply MS. State Empl. Service, P.O. Box 13348, 5959 I-55 N. Frontage Rd., Jackson MS 39236-3348, Job# MS2786079.

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Advisory Software Specialist

Extensive experience required in the implementation and support of large complex, CLIENT-SERVER distributed systems and relational databases. As a technical coordinator/team leader, provide technical direction to other team members and support developers, particularly in troubleshooting and performance/problem resolution. 4+ years of strong POWERBUILDER, SYBASE, and UNIX. Knowledge of C is a plus.

POWERBUILDER Senior Programmer Analyst

Strong experience in CLIENT-SERVER development, and 2-3 years of strong POWERBUILDER and SYBASE. Knowledge of UNIX and C is a plus.

Beyond the technical experience, you'll enjoy the feeling of going home knowing your talents made an impact on someone's life. We also offer competitive salaries and a comprehensive benefits program including 100% tuition reimbursement.

To find out more about these and other opportunities, please call our JOB OPPORTUNITY HOT LINE at (212) NEW-JOBS (212-639-5627). Our environment is diverse and our positions varied, so please call to find out more information or forward resume with salary history/requirements, to: **N. Hopkins, Employment Department, #970421, MSKCC, 633 Third Avenue, 5th Floor, New York, NY 10017 or e-mail to: browna@mskcc.org.** EOE/AA.

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Voice Systems Analyst to develop test plans and write scripts for program verification of new client/server based Voice Response Units ("VRU") applications. Develop test routines with application programmers and validate results for production roll-out. Ensure integrity of new applications by generating test routines to validate output from critical software modules. Work with programmers to make necessary modifications. Generate test plans based on production requirements and simulate high stress conditions through use of call generators and other pertinent tools. Preproduction project management and implementation of certification procedures with business units. Provide third level support in problem resolution to Voice Services Group. Evaluation and support of UNIX, O/S2 platform, DIRECTTALK 6000, INTERVOICE VRUs, and application upgrades. Participate in evaluation of new technologies and initiatives. Requires Bachelor of Science Degree in Computer Science and two (2) years experience in Job Offered OR two (2) years experience in designing, developing, and implementing computer telephone integration ("CTI") or Voice Response Systems. The 2 years of experience must include at least 1 year in each of the following: installation and operational support of VRUs; writing script language in UNIX/AIX; programming Automatic Call Directors ("ACD"); and client/ server based technologies (TCP/IP) to connect VRUs and ACDs. Salary $48,000/yr; Mon-Fri, 9:00AM-5:00PM. Send resumes to: Case Number 61770, P.O. Box 8968, Boston, MA 02114. EOE. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

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Package Integration Consultants

Have the ultimate choice at KPMG, a world wide professional services finn. You'll find a new way of thinking in our Package Integration Solutions practice where architecture, planning, design and implementation services are used to extend enterprise software packages into optimal business solutions.

In these positions, you will link business processes with data to maximize efficiency and enhance customer service. Your background must include experience in system or package implementation or system development, using one or more of the following:

- Peoplesoft
- SAP
- Oracle
- BaaN
- JD Edwards

Here, you will handle all aspects of package implementation including project management, package configuration, business process reengineering, data conversion, and system testing and integration. Your work will include: assessing business to determine new systems needs, and establishing and documenting system requirements; soliciting proposals, developing RFP's and evaluating and selecting systems; along with package demonstration and implementation planning.

Opportunities also exist for Electronic Commerce/ EDI Managers and Consultants.

For opportunities in the Midatlantic area, forward your resume to: KPMG Consulting, Human Resources, Dept. SL-PI, One Radnor Corporate Center, 100 Matsonford Road, Suite 500, Rador, PA 19087, Fax (610) 995-4169.

For opportunities in the Metro New York area, forward your resume to: Technical Recruiting, Dept. LM-PI, KPMG Consulting, 345 Park Avenue, 40th Floor, New York, NY 10154, Fax (212) 872-7653.

To be considered for positions available in other locations throughout the U.S., contact us in any of the following ways (please indicate Dept. SACW7324 in all responses): FAX (high resolution) your resume detailing your qualifications to (201) 505-6200. MAIL a scannable copy of your resume to KPMG Resumix Office, 3 Chestnut Ridge Road, Montvale, NJ 07645. E-MAIL (ASCII text) to resume@pa0015d5.us.kpmg.com. We are an equal opportunity employer m/f/d/v. KPMG Peat Marwick LLP is the U.S. member finn of KPMG International.

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MANAGER-DATA PROCESSING: Orlando, Fl. 8a-5p $26,230.00/year. Directs and coordinates development and production activities of data processing department. Consults with management to determine information requirements of management, determine boundaries and priorities of new projects, and discuss system capacity and equipment acquisitions. Confers with department heads involved with proposed projects to ensure cooperation and further define nature of project. Consults with computer systems hardware analyst to define equipment needs. Reviews project feasibility studies. Establish work standards. Assigns and schedules work, or delegates work to subordinate managers and supervisors, and reviews work. Interprets policies, purposes, and goals of organization to subordinates. Prepares progress reports to inform management of project status and deviation from goals. Contracts with management specialists, technical personnel, or vendors to solve problems. Directs computer processing personnel to change computer operating schedule to meet production, malfunctions, and maintenance to ascertain costs and plan department operating changes. Analyzes department work flow and workers' job duties to recommend reorganization or departmental realignment within company. Participates in decisions concerning staffing and promotions within data processing department. Directs training of subordinates. Assists staff to diagnose and solve computer equipment problems. Participates in technical projects, such as writing equipment specifications or developing computer programs for specified applications. REQUIRE: B.S.-MIS. Contact: Mr. Frank Cortes, Certified Food Service of Orlando, 1273 Central Florida Parkway, Orlando, Florida 32837.

SENIOR DEVELOPER SPECIALIST

Develop systems for business or technical applications; program in mainframe experience COBOL/CICS, VSAM, VSE/ESA, JCL, ICCF; systems integration between mainframe and PC network systems using Visual Basic, Visual Foxpro, clipper, Dbase, C++, fax server, EDI, knowledge of Windows 3.X, Windows NT, OS/2, Novell Netware; evaluate user request for new or modified existing programs using programming techniques and computer knowledge increasing operating efficiency or adapting to new requirements; oversee installation of hardware and software; monitor performance of program after implementation.

Salary range: $50,000-$60,000. Hours: Monday-Friday 8-4:30 pm. Years of experience: mainframe 10 years; PC 7 years.

Submit resume to:

ABC Distributing, Inc.
Attn: Recruiting
P.O. Box 611210
North Miami, FL 33261-1210
(305) 944-6900

PROGRAMMER ANALYST. Performing feasibility studies, EDP requirement analysis, review, evaluate and suggest modifications to client requests; design input and output layouts; prepare system and program specifications; plans, develops, defines programs and systems; writes detailed operating procedures; database design and system flow-charts, prepare test plans and test data; programming testing and documentation; assist the users in migrating to new application. The above activities will be performed using Desktop Workstations and related software, particularly MS Windows, Smalltalk, C++ and Relational Databases for analysis, design and Qbject Qriented Software development Methodologies. Should be willing to travel to client sites for short/long duration of time for the purpose of customizing and implementing of software. Bachelor's degree in computer science or math-related, and two years experience in job offered required $44,000/yr. 8:00 A.M. to 5:00 P.M. Interested applicants apply by resume to: Georgia Department of Labor, Job Order #GA 6076948, 465 Big Shanty Road, Marietta, GA 30066-3503, or the nearest Department of Labor Field Service Office.

SENIOR SOFTWARE ENGINEER to analyze, design, develop, port, test., implement and support GUI-based client/server software for the telecommunications industry using C/C++, Object Qriented programming methodologies, UNIX and its utilities (Awk, Lex, Yacc, Cscope), Shell programming, REXX, Relational Databases, SQL, MVS, VM, GUI design using X-windows/Motif, CMVC for project tracking, and source code control systems (SCCS and IDSS) on UNIX workstations and IBM 3090 mainframes. Require: M.S. degree in Computer Science with one year of experience in the job offered as Senior Software Engineer or in the related occupation of Software Engineer; At least six months of the required experience must be in software development for the telecommunications industry utilizing knowledge of the software architecture of telecommunications switches. Extensive paid travel to client sites within the U.S. Salary: $30.00/hour; M-F, 8 a.m. to 5 p.m. Apply with resume to: Georgia Department of Labor, Job Order # GA 6078160, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

Systems Analyst. SALARY: $41,000.00 per year. HOURS: 8:00 a.m. to 5:00 p.m., 40 hours per week. JOB DUTIES: Analyze user requirements, procedures, problems to automate, design, develop, test, implement and maintain computerized information systems based on IBM mainframe computers using COBOL, CICS, DB2, FOCUS, MVS, JCL, INTERTEST, FILEAID, REXX, and CLIST. EDUCATIONAL REQUIREMENT: Must have Bachelors degree with a major in Computer Science, Engineering or Applications; Electrical, Electronics or Industrial Engineering. EXPERIENCE REQUIREMENT: 2 years experience in job offer or in related occupatoin of programmer analyst or systems consultant. SPECIAL REQUIREMENT: The two years experience in job offered or as programmer analyst or systems consultant should be in work on IBM mainframe computers using COBOL, CICS, DB2, FOCUS, MVS, JCL, INTERTEST, FILEAID, REXX, and CLIST. Job located in Atlanta, Ga. Send resume or apply in person to: Georgia Department of Labor, Job Order # GA 6080350, 2943 N. Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

Systems Analyst. $42K/yr. 8a-5p. 40hr/wk. Analyze user reqmts, procedures & problems to automate processing & to improve comp systs by dsgng/dvlpg & implmntg client/server applics & conducting structured systs analysis & dsgn on IBM AS/400 using RPG/400, CL/400, QUERY/400, SQL/400, ALDON CMS, HAWKYE, PRISM, BASIC, FQRTRAN & CQBOL. Must have Bach deg w/major in Comp Sci or engg; or mathematics or electronics. 2yr exp in job offer or in related occupation of S/ware engr. The 2yr exp in job offd or as pgrmr analyst should incl work using skills in conducting structured systs analysis & dsgn on IBM AS/400 using RPG/400, CL/400, QUERY/400, SQL/400, ALDQN CMS, HAWKYE, PRISM, BASIC, FORTRAN & CQBQL. Job loc: Duluth, GA. Apply only by sending resume to: GADQL, JQ#GA6080021, 1535 Atkinson Rd, Lawrenceville, GA 30243-5601 or the nearest Dept of Labor Field Service Office. EOE/AA employer.

Object Oriented Analyst/Programmer. Duties: Analysis, design and program development of Object Oriented Software Systems including Smalltalk. Requirements: Bachelors in Computer Science or Engineering. 6 months experience in job offered or one year experience as Programmer including projects involving Object Oriented Softwarre. 8:00 A.M. - 5.00 P.M. Mon. - Fri. $42,000 / Year. Submit resume to: Job Service of Florida, 2660 W. Oakland Park Blvd, Fort Lauderdale. FL. 33311-1347 Re. Job Order No: FL-1556713.

Systems Consultant - Provide services in design & development of various business systems & applications. Migrate from IBM AS/400 platform to Client Server. Develop Stored Procedures & Print Control Functions. Design and develop object oriented system architecture and libraries, client-server architecture, resource sharing architecture, & define distributed processing architecture. Work extensively with Windows NT, Sybase, PowerBuilder, Object Oriented Methodology, C, IBM AS/400, AIX, Unix, DATA Modeling, HTML Multi Media Development Tool, and System Architect Case Tool. $53,000.00 yr. 40 hrs/wk. M-F. B.S. or foreign equivalent in Computer Sc. or Computer Eng. or Mathematics & 2 yrs. exp. in job offered or 2 yrs. related exp. as Systems Analyst or Programmer Analyst to include use of WindowsNT, Sybase, PowerBuilder, Object Oriented Methodology, C, IBM AS/400, AIX, Unix, DATA Modeling, HTML, and System Architect Case Tool. Will work at unanticipated locations in the U.S. Send resume or apply to: GA Dept of Labor, Job Ord # GA 6073826, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Dept of Labor Field Service Office.

DP SYSTEMS ANALYST I $24,941.40 PER YEAR Assists in development of computer system in a UNIX environment for implementation of document imaging system for recognition, capture and processing of state govt. tort claims, purchase orders, invoices and requisitions. Develops software to integrate image and UNIX functions into a relational database model and provide transparent functioning of systems. Requires Bachelors Degree in Computer Science, Data Processing or Mathematics, Plus One Year of Experience in Document or Graphical Image Processing and Recognition in UNIX Environment, or Masters degree in computer science with course work or thesis in Document or Graphical Image Processing and Recognition in UNIX Environment. Send resumes to: Karen M. Holloway Personnel Director Dept. of Finance & Administration 1501 Walter Sillers Building Jackson MS 39201

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Data Base Design Analyst - 40 hrs per week, 9-5PM, $800.00 per week, located in Deland, Fl. Requires a Bachelors Degree in Computer Science, and three years experience in the job offered. Must leave a Bachelors Degree or equivalent in Exp. - Design and development of network database systems for retail and wholesale of parachute marketing. Coordinate data base development to interface with customers to provide online information as to availability of company products. Develop Multimedia applications distributed in CD-Rom and distribution of marketing information to potential customers via Internet. Applicants must submit resume to: The Dept. Of Labor/Operations, 1320 Executive Center Drive, RM 330, Tallahassee, Florida 32399, RE JOFL#1567168

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DATABASE MANAGER

A minimum of 2 years experience with Sequel Server 6.X, Visual Basic 4, and Microsoft Back Office Suite is required. Knowledge of Access and accounting a plus. You must be able to complete database management of Solomon accounting package, data conversion of ASCII file to SQL, daily maintenance of Windows NT 3.51 Servers, Windows 95, Windows 3.1PCs. You'll assist in future local and wide area networks, as well as provide daily assistance to end-users.

SYSTEMS ANALYST

As a member of the corporate accounting team, you will develop reports and analyses in partnership with accountants who are preparing financial statements and other managerial information. Related experience and/or college-level coursework with large complex relational databases, report development utilizing multiple databases in a financial environment and exposure to a Windows NT server required. Solomon IV or other LAN-based accounting system experience is a definite plus.

MUMPS PROGRAMMER - *ORLANDO*

A minimum of 3 years MUMPS programming experience is required. We are running ISM on a Digital VAX using the Antrim Laboratory Information System and Account Receivable System. You'll have the responsibility from initial user request to implementation of programming projects.

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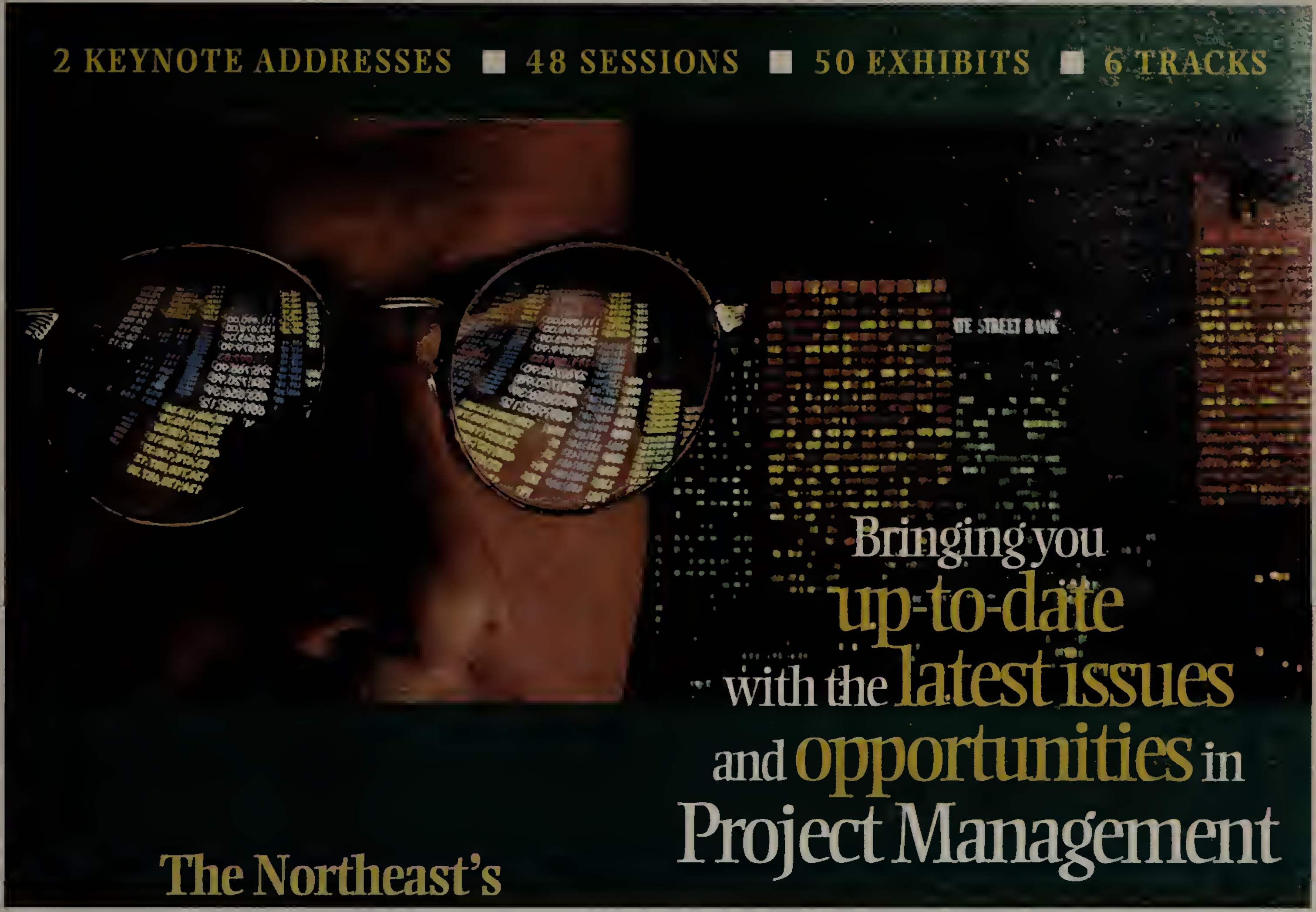
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Programmer Analyst, Malden, MA; Perform system study, design, development, implementation and maintenance of financial and manufacturing applications on ORACLE, ORACLE DBA tools, ORACLE development tools, SQL Power Tool, Ad-Hawk Spacer under RS/6000, HP9000, SUN, AIX, UNIX and WINDOWS. Req'd. Bachelors in Comp. Scie. 1 yr exp in job offered. 40 hrs/wk, 9:00am-6:00pm, $56,000/yr. Submit two (2) copies of resumes in response to: Case #61840, PO Box 8968, Boston, MA 02114.

SOFTWARE ENGINEER

Software Engineer for Expert Level Tier 3/4 technical support and project management. Accord is a Hi-Tech mfr of MCU & Gateway prod for multimedia communications market. Engr/computer sci deg, 3+ yrs exp. Telecom hw/sw, ISDN, TCP/IP preferred. Competitive salary, bonuses and stock options. Resume to:

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Computer Specialist

to provide technical guidance and network project management, with experience in Microsoft Windows NT Workstation and Microsoft Windows NT Server.

Salary is $45,939 - $59,725 yearly, depending on experience.

Call (202) 942-4150 for Application package DEU-97-72.

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to provide network design, security and optimization activities, with experience in data communications, including network design and security, firewall configuration, traffic analysis, and general operational communications network engineering functions.

Salary is $64,555 - $83,922 yearly, depending on experience.

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IMMEDIATE OPENINGS

Systems & Programming Manager

Systems & Programming Manager for Broward County Court Administration to supervise programming staff in newly installed AS/400 Model 50s environment. Knowledge of C++, Object Oriented Design techniques, relation database & leadership qualities a must. Bachelors with 3-5 years programming management experience desired.

To apply submit resume & salary history to Broward County Courthouse, 201 SE 6 St, Room 880, Ft Lauderdale, FL 33301. Closing date 3/28/97. E/O/E

Fax: 954-831-5572

Operations Research Testing Analyst to develop testing of operations research software. Will construct and execute tests for linear and nonlinear programming, decision analysis, and project management, validate results and execute tests on a variety of operating systems. Salary $35,000. Hours: 35 hrs. Wkly, 9 a.m. to 5 p.m. Requires M.S. in operations research or directly related field to include operations research methodologies, linear, integer, mixed integer, and network flow programming, nonlinear programming, simulation and project management end applications of software which implement above methodologies for problem solving. Send resume to the NC Job Service, at 742-F East Chatham Street, Cary, NC 27511 or the job service nearest you; all resumes must include Social Security Number, and refer to NC Job Order # NC5760952 and DOT # 020-067-018.

Software Engineer. $52K/yr. 8a-5p, 40hr/wk. Dsgn/dvlp/Implmnt service mgmt syst & client/server applics using HP/UNIX, C, INGRES 6.4/02, ESOL, ABF, OBF REPORTWRITER, MS-DOS, POWER BUILDER, WATCOM SOL, NOVELL LAN & FOXPRO. Masters or equiv deg w/major in Comp Sci, Application or Engg. 4yr exp in job offer or in related occupation of s/ware consultant The 4yr exp in job offd or as s/ware consultant should incl work skills in HP/UNIX C, INGRES 6.4/02, ESOL, ABF, OBF, REPORTWRITER, MS-DOS, POWER BUILDER, WATCOM SOL, NOVELL LAN & FOXPRO. Job [illegible] Atlanta GA. Send resume or apply in person: GADOL, IO#GA6078200, 2943 N Druid Hills Rd, Atlanta, GA 30329-2909 or the nearest Dept of Labor Field Service Office. EO/AA employer.

Programmer Analyst. Study Analysis and development of Client Server based Applications System. Defining model into system design by identifying data elements and analysis using Object Oriented Methodologies. Developing the Client Server Application Software on platform such as RS/6000, HP-9000 and SunSparc hardware architecture. Experience in C++, UNIX Shell programming MFC Libraries, OLE 2, TCP/IP, Windows NT, Win32, AIX, HPUX, Oracle, SQL*Plus and ODBC. Unit/System testing and implementation in a Client/Server UNIX and network based architecture. Willing to travel and relocate as needed. BS. in Computer Science or related fields. 2 yrs. exp. 40 hrs./wk. $50,000/year. Send Detailed resume to: Sankar Paramesh, Technosoft, Inc., 3901 National Drive, Suite 220, Burtonsville, MD 20866.

SOFTWARE ENGINEER to design, develop, implement, test, install, modify and maintain client/server based software systems for various applications using Visual Basic, C, C++/MFC, Windows APIs, Windows SDKs, Crystal Reports, Transact SQL, ProC, SQL Server, Oracle, MS-Access, HTML, CGI, TCP/IP, and ODBC under MS-DOS, UNIX, Windows, and Windows NT operating systems. Require: M.S. degree in Computer Science/Engineering with two years of experience in the job offered Extensive paid travel (40%) to client sites within the U.S. Salary: $56,000 per year, 8 am to 5pm, M-F. Apply by resume to: Denise Boeger, Branch Administrator, Daugherty Systems, 400 Interstate North Parkway, Suite 500, Atlanta, GA 30339, Attn: Dept. A

INFORMATION SYSTEMS PROFESSIONALS

GATX Logistics Inc. is an industry leader in providing integrated third party logistics solutions. We provide value added services for a wide range of warehousing, packaging, transportation and inventory management needs. Our ever growing customer base encompasses over 100 facilities throughout the U.S., Canada and Mexico.

Our Information Systems professionals enjoy the exciting challenges of a dynamic environment in the high growth logistics industry. Customer success is driven by our Project Managers. These managers enjoy a wide range of responsibilities, from managing the customer relationship to coordinating, implementing and financially managing the system project life cycle. Our infrastructure of AS/400's, RS/6000 and Intel platforms provides the opportunity for Application Developers and Technical Service professionals to utilize many skills. A number of software tools including AS/400 Synon/2E, Obsydion, C/C++, and Lotus Notes are utilized to offer comprehensive logistic system solutions. The information exchange is streamlined through the use of EDI. In addition, comprehensive training, documentation, and 24 x 7 help line support are provided to meet our customers' needs.

Our continued success has created immediate career opportunities in the following areas:

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Project Managers/Leads

SYSTEMS SUPPORT

Help Line Systems Support Manager/Supervisor

APPLICATIONS DEVELOPMENT

Senior Programmer Analyst • Programmer Analyst • EDI Professionals • Synon /2E

We offer an excellent salary and benefits package and the opportunity for growth. If you meet these requirements and possess a positive, professional and flexible demeanor in dealing with customers and team work, and the ability to be proactive in a customer-responsive warehouse environment, please forward your resume and salary requirements to: **GATX LOGISTICS, INC., Staffing, 1301 Riverplace Boulevard, Suite 1200, Jacksonville, FL 32207 or Fax: (904) 396-5647 or e-mail: sjoakman@interramp.com (NO PHONE INQUIRIES OR RECRUITERS)**. Equal Opportunity Affirmative Action Employer M/F/D/V

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Today, we invite you to discover for yourself what kind of impact Motorola can have on your career by joining us in one of the following positions:

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Responsibilities include technical support for the Oracle Database Management Systems. You will monitor the performance of database and make appropriate tuning adjustments, upgrade to new revision levels and recommend future directions, and work with user department to coordinate system changes and implementation of new requirements. Classical duties: user and security administration, space and memory management, disaster recovery planning and performance monitoring.

Qualified candidates must have a willingness to work flexible hours; a minimum of 7+ years experience; a BS Degree in Computer Science or Engineering, Masters preferred; and knowledge of UNIX and Oracle database. We prefer a candidate with Detail understanding of Database Management Systems, particularly Relational Databases, and experience with Clarify Systems and client server development model. Knowledge of HP and DEC Alpha platforms is a plus.

SAP APPLICATIONS PROJECT LEAD

This position is responsible for the development, implementation, and support of SAP applications for Motorola's facilities in Mansfield, MA and Huntsville, AL. The ideal applicant should have strong skills in configuring and supporting applications for FI, SD, MM/PP, EDI conversions and application interfaces. Requirements also include experience in technical support with data conversion and applications integration. This position could be based in either Mansfield, MA or Huntsville, AL.

INTRANET APPLICATION DEVELOPER

Our continued growth has created a need for an application developer to design and code CGI based applications. You will work with system analysts in defining and executing technical solutions for business automation needs leveraging WEB technologies. Duties include performing high level system design and analysis, as well as coding and testing of applications you develop. Additional responsibilities involve researching, recommending and implementing third party software solutions and technologies.

Qualified candidates must possess strong analytical skills, in addition to solid organizational and communication skills. This position requires a BSCS and 3-5 years of SW experience. You must have knowledge of and experience with UNIX shell, PERL, and C programming. Experience with HTTP, FTP, HTML,CGI and TCP/IP fundamentals is also needed. Familiarity with JavaScript, Java, C++, SQL, Oracle, Netscape and NT is helpful. An advanced degree and/or experience is a plus.

For immediate consideration, please forward your resume, indicating position of interest to: **Attn: Staffing Dept., CW324, Motorola ISG, 20 Cabot Blvd., Mansfield, MA 02048. E-mail: LZZ0001@email.mot.com. Fax: (508) 339-3752.** Creating a diverse workforce through equal opportunity. M/F/D/V.

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Systems Consultant - Provide services relating to design & development of various Business systems & applications. Redesign & optimize performance of Document Handling & File Tracking System. Design database of Beta Project using ODBC. Design & develop Workbook application using Relative Database Technology, Object Oriented Concepts, & RAD methodology. Backup data to SQL. Write report routines using Crystal Reports. Develop & Implement algorithms to create smart-custom-print routine for high graphic images. Write new modules of generic code for parallel projects. Test & modify existing routines. Design, develop & implement a Marketing Research System using Visual Basic, MS SQL Server, & MS Access under MS Windows. Use SAS for Statistical calculations in research projects. $49,754.00/yr. 40 hrs/wk. M-F. B.S. or equivalent in Computer Sc. or Computer Eng. & 2 yrs exp in job offer or 2 yrs related exp. as Systems Analyst, Project or Programmer Analyst, or Graduate Research Ass't to include use of RAD Methodology, ODBC, Relative Database Tech., Object Oriented Tech., SQL, Crystal Reports, Algorithms, Visual Basic, MS SQL, MS Access, MS Windows, & SAS. M.S. in noted disciplines & 1 yr exp. is acceptable in lieu of B.S. & 2 yrs. exp. Will work at unanticipated locations in the U.S. Send Resume or apply to GA Dept of Labor, Job Order #GA 6074957, 1535 Atkinson Rd., Lawrenceville, GA 30243-5601 or the nearest Dept of Labor Field Service Office.

Software Engineer, Watertown, MA; Develop and analyze programs for Gait and Postural sway measurements. Calculate parameters useful for quantifying biomechanics measurements for Gait and Postural sway applications. Develop software for the kinematics of rigid body motion and build primitives for representing motion in 3D space using Computer Graphics. Develop real time data acquisition software using C++ and MFC for microsoft Windows using Visual C++. Develop software to interface with different data acquisition boards and communicate with peripheral devices. Design and build load measuring devices. Req'd. Masters in BioMechanics or Mechanical Engg. 1 yr exp in job offered. 40 hrs/wk, 9:00am-6:00pm, $48,000/yr. Submit two (2) copies of resumes in response to: Case #61839, PO Box 8968, MA 02114.

COMPUTER PROFESSIONALS

Logic Works, a leading developer of database application modeling tools, has recently been ranked #3 on Business Week Magazines Hot Growth Companies list. Due to our continued success we currently have opportunities available for:

SR. SOFTWARE & SOFTWARE DEVELOPERS

Successful candidates will be involved in the final design, implementation, integration and rollout of Logic Works software products. A strong understanding and experience with a variety of DBMS's, ODBC and direct connect interfaces to DBMS's is required. Requirements also include Windows GUI and MFC experience along with strong C++ skills (including templates, exceptions and class design) using Visual C++ or other PC based C++ compilers. Graphic modeling tools experience is a big plus.

QA ENGINEERS

Successful candidate will develop expert knowledge of Logic Works products and then through test plans and innovation test cases test the products. Requirements include 5+ years experience testing commercial software applications for Windows platform; superior PC and Windows skills, including Windows NT and/or Windows 95; experience with automated testing tools, such as Segue QA Partner or Microsoft Visual Test; and either testing or development experience with a relational database management system. Programming language experience in C or C++ and RAD experience, such as Visual Basic, Delphi or PowerBuilder a plus. Excellent written and verbal communication skills a must.

Logic Works offers a competitive compensation and benefits package. For confidential consideration, please send/fax your resume and salary requirements, indicating position of interest, to: **Human Resources, Logic Works, 111 Campus Drive, Princeton, NJ 08540; Fax 609-514-2906.** Equal Opportunity Employer.

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PROGRAMMER ANALYST (2 openings): Plan, develop, test, & document computer programs, applying knowledge of programming techniques & computer systems, evaluate user requests for new or modified programs to determine feasibility, cost & time req'd., compatibilities; consult with users to identify current operating procedures & clarity program objectives; formulate plan outlining steps req'd. to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language; system & network administration; solving system & user problems; maintaining HP-UX, SUN Solaris, & AIX; maintaining SUN Sparc Stations, RS/6000 & HP 9000; shell programming using Bourne Shell, Korn Shell & C-Shell; planning for upgrades; local network configuration, developing administration tools in C-language; & using each of the following: IBM RS/6000, HP 9000. SUN Sparc Station, AIX, SUN OS, SUN Solais, HP-UX, C language, Bourne Shell, Korn Shell & C-Shell; NIS, AFS & NFS; and X-Windows/Motif Widgets. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Info. Systems, Computer Engg., Electrical Engg., Electronic Engg., Mathematics or its equiv. in ed. & exp.; 2 yrs. exp. in the job offered or 2 yrs. exp. in related occup. such as Senior Graduate Trainee. Programmer, Programmer Analyst, Systems Analyst, Assistant Engineer, Software Engineer, System Administrator or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd. ed. & exp. Must have some related experience including solving system and user problems; maintaining HP-UX or Sun Solaris or AIX; using Bourne Shell or Korn Shell or C-Shell; and using each of the following: C-language & X-Windows/Motif Widgets. $46,575. yr. 40 hrs/wk, 8a-5p. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 & include REF.# 1476-96

Senior Member of Scientific Staff: Research, design, test and implement call processing softwara used on a digital telecommunications switch. Code, test end support operator services, common channel signalling #7 and Integrated Services Digital Network functionalities, including: refining and documenting customer requirements; researching and documenting design architecture; writing, debugging and testing software; and providing product design support to customers. Schedule call processing feature deliverebla dates. Document, prioritize, end track all customer problem reports to final disposition. Recommend design changes or modifications to better meet customer needs and accommodate new applications. Interface with other product groups concerning technicel issues and provide training to junior designers. Interface with customers and Product Line Management to determine custoinar requirements. Provide technical product support to Field support, Verification Office (VO) support and test groups. Identify, debug, and provide solutions for field end VO problems. Req.: Bachelor of Science degree in Computer Science, Computer Engineering, or Computer Systems Design and two years experience in the position offered or two yeers experiance es a Digital Telecommunications Switch Soft-ware Dasign Enginear M-F, 8:00-5:00, $58,100.00/year Apply at the Texas Workforce Commis-sion, Dallas Texes, or send resume to the Texes Workforce Commission, 117 Trinity, Room 424T, Austin Texas 78701, J.O. #TX7856644 Ad paid by an equal opportunity employer.

Programmer/Analyst to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer s/ware for clients' EDP systems; use C programming & Unix environment - language development tools, standard library, system call interface & shell programming; INFORMIX & INGRES relational d/base management systems, 4GL programming. ESQL/C & COBOL, mini computer & client/server environment; Reqs. Bach. in Comp. Sci., Computer, Electrical or Electronic Engg., Comp.Info. Systems, Math or its foreign educational equiv. in educ. & exp., 2 yrs exp in job offered or 2 yrs related exp such as Programmer Analyst or Programmer. Related exp must include design, development & implementation of business application software using Informix, Ingres RDBMS & C on Unix systems. Will accept 3 yrs college ed. Plus 3 yrs exp in job offered or related occup. in lieu of req'd ed. & exp; $45,000/yr. 40 hrs/wk 8a-5p. Send 2 resumes & cover letters (no calls) to ES Sp Prgms, REF #2204JD, Ohio Bureau of Employ. Services, PO Box 1618, Columbus, OH 43216.

Software Engineer Design, develop and implement C/C++ software applications using Oracle 7.1 RDBMS, SQL*Forms, SQL*Reportwriter, Oracle Forms, Oracle Reports, SQL, SQL*Plus, PL/SQL, Pro*C, COBOL, ACMS, DECForms, CMS, MMS, and CDD+ on UNIX, VAX, SUN, and PC systems. Write database triggers, stored procedures and functions, create tables, indexes and synonyms. Administer Oracle database with SQL*DBA utility, prepare flowcharts and test programs. Maintain system security, enroll users/monitors user access, monitor system performance, tune SQL queries and plan for backup and recovery operations. Reverse Engineer Oracle database, develop logical models using oracle CASE tools. Implement referential integrity constraints for database tables and write Pro*C programs. Master of Science degree required in Computer Science plus 2 years of experience in the job duties described above. Salary: $45,500/year for a 40 hour work week. Apply at the Texas Workforce Commission, Fort Worth, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, JO# TX7858233. Ad paid by an Equal Opportunity Employer.

Programmer/Analyst, 40 hrs/wk, 9am-5pm, $37,525/yr. Software development & programming for projects ranging from management information systems to quality control. Statistical analysis on newly-created programs. Projects include: LAN administration; quality control; design & statistical analysis of programs to improve productivity using Stochastic Processes, Multivariate Analysis & object-oriented methods. Tools: Scriptlink; MS-DOS; C; Smalltalk; Windows; OS/2; PC LANs-Novell; PC SAS. M.S in Computer Science, Math or Statistics required. Graduate education must include 1 course each on: Stochastic Processes; Multivariate Analysis; Design & Analysis of Experiments; Object-oriented methods (including Smalltalk); as well as 1 project using SAS. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to. ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY. 401 South State Street - 3 South, Chicago, IL 60605, Attention: Janet Aschenbrenner, Reference #V-IL-16455-A. No CALLS. An Employer Paid Ad

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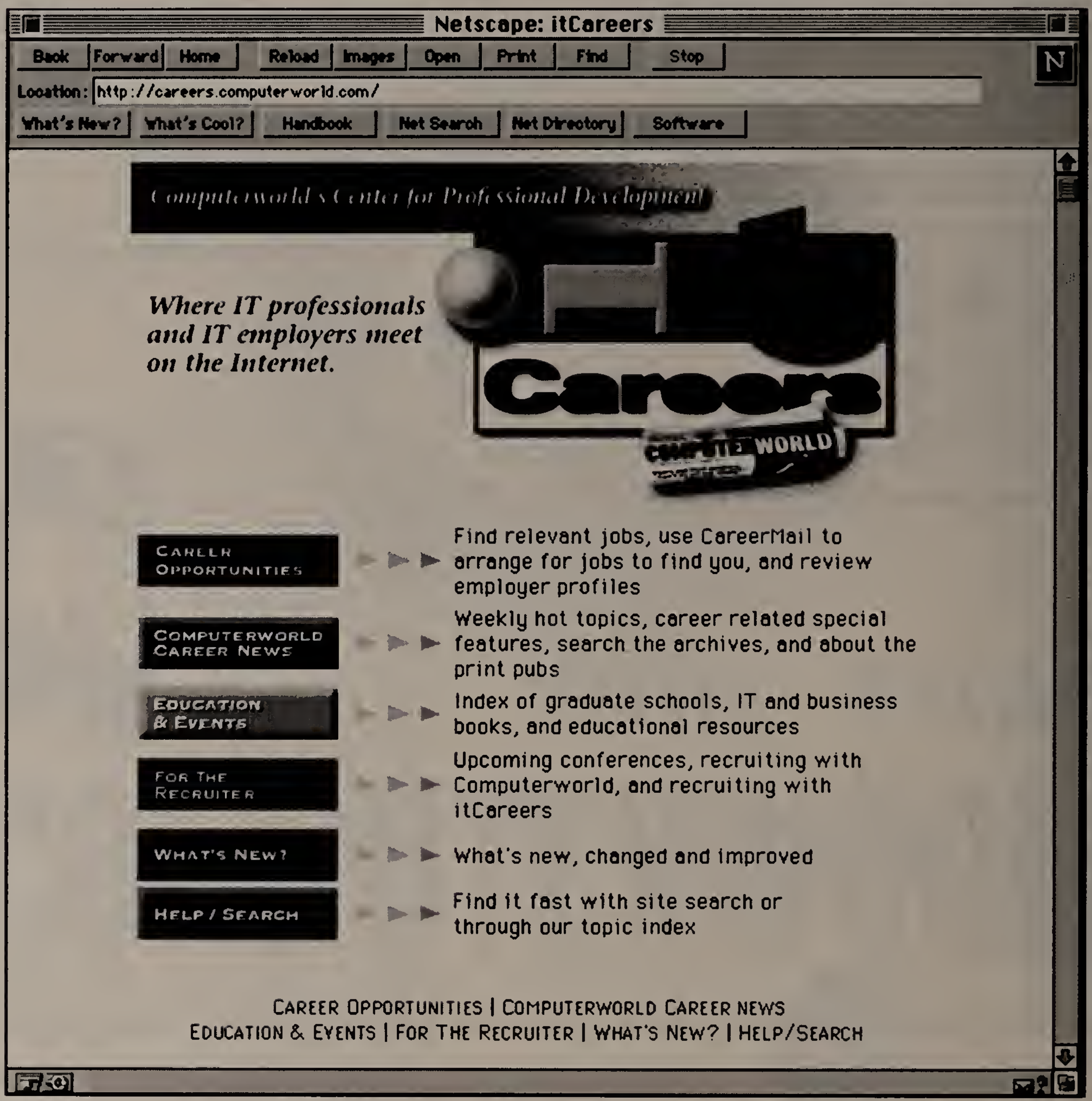

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ASSISTANT DIRECTOR, NETWORK SERVICES. Wide and local area network analysis, installation, troubleshooting, maintenance and management. Design, propose and implement changes to current network including the incorporation of switched technology to enhance performance implementing network technologies such as ATM, FDDI, Token-Ring, Ethernet, Switched Ethernet, 100 Base-T and 100VG-Any LAN as appropriate; manage campus network project (including design and implementation); implement a system for performance modeling using COMNET III from CACI Network Modeling and Analysis Tool; engage in proactive network management with distributed sniffer like tools; configure/maintain host connectivity using netware for SAA: coordinate equipment and line vendors; evaluate vendor proposals, make recommendations and implement solutions; network systems include Novell Netware 4.x on IBM LAN server, SNA, HP-UX and Appletalk. Master of Science degree in Computer Science required. Academic program or experience must have included network analysis and troubleshooting in Novell Netware 4.x and IBM LAN server environment, use of COMNET III from CACI Network Modeling and Analysis Tool, and evaluation of network technologies including ATM, FDDI, Token-Ring, Ethernet, Switched-Ethernet, 100 Base-T and 100 VG-AnyLAN. Must have proof of legal authority to work permanently in the U.S. 40 hours, 9:00 a.m. to 5:00 p.m., $54,000 per year. Applicants should send resumes to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: JANET ASCHENBRENNER, Reference #V-IL-14287-A AN EMPLOYER PAID AD. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

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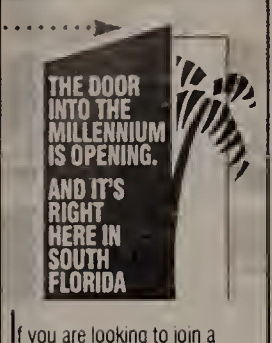
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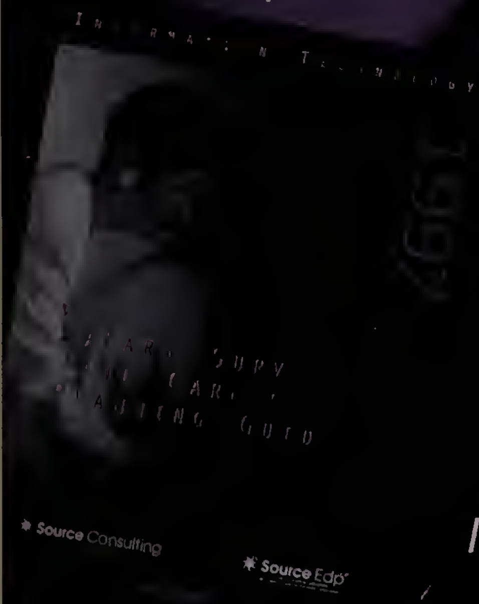

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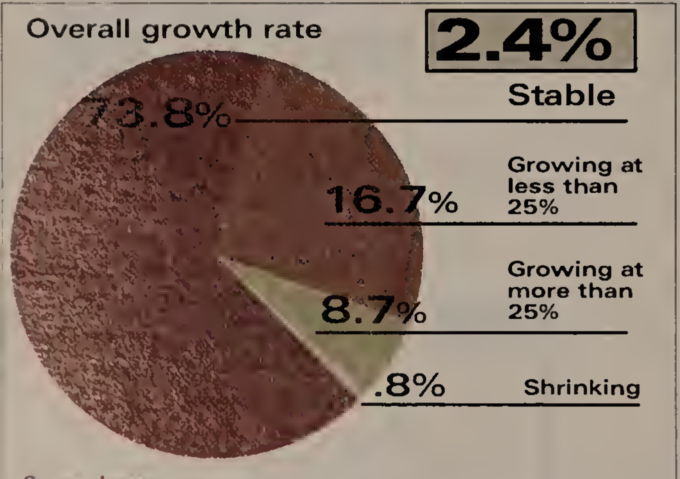
Career Survey: Energy

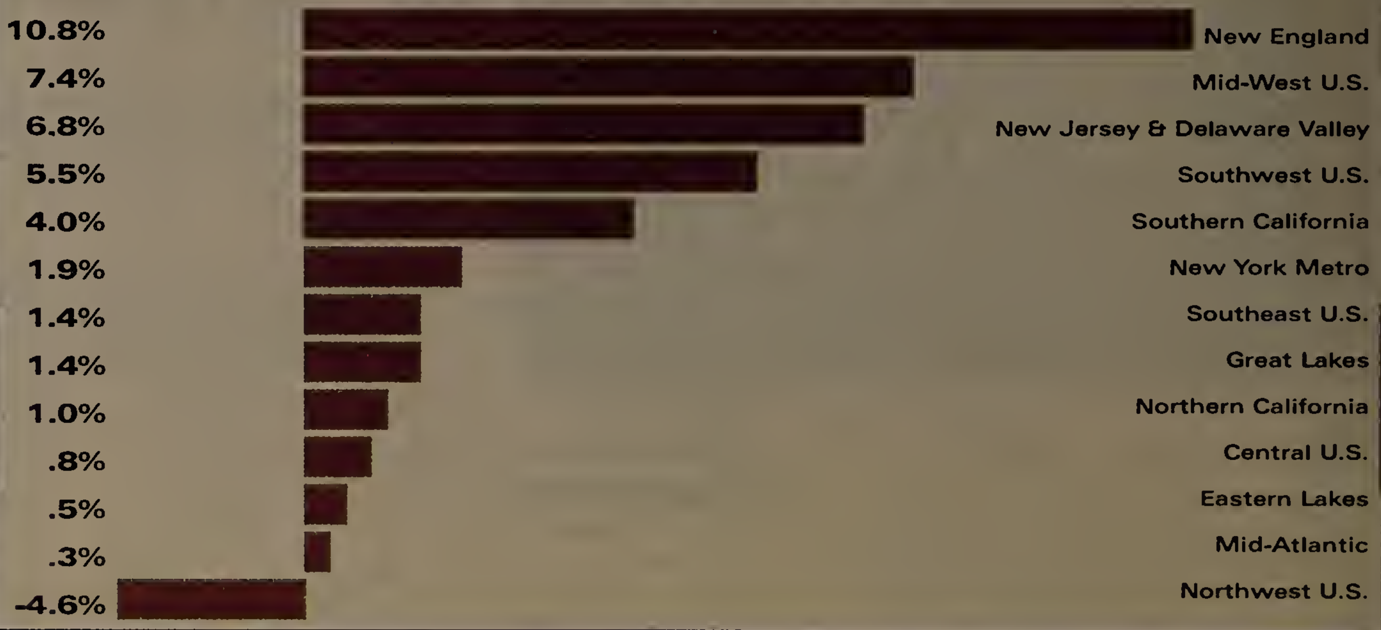
Industry Hiring Trends



Survey base:
126 Technology firms involved in Energy

Survey conducted between December '96 and February '97

Regional Growth Analysis



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Cybex announces first KVM Switch for Consumer Market

Cybex Computer Products Corporation today announced the introduction of its first KVM (Keyboard/Video/Mouse). The new Duette Commander, a 2-port KVM switch, is targeted at the power user segment of the PC market.

"The Duette Commander expands our KVM switch product line into the growing market of dual PC users."

The Company's AutoView technology utilizes on-screen menus for the user to easily switch between computers. The KVM switch allows users to attach two computers to a single monitor, mouse and keyboard. Applications include power users who have two computers, such as a desktop and laptop computer, that can be connected to a single monitor, keyboard and mouse for complete control over both units.

"The Duette is priced to provide excellent value for the home or small office user." Contact: Stephen F. Thornton 205-430-4000.

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Marketplace

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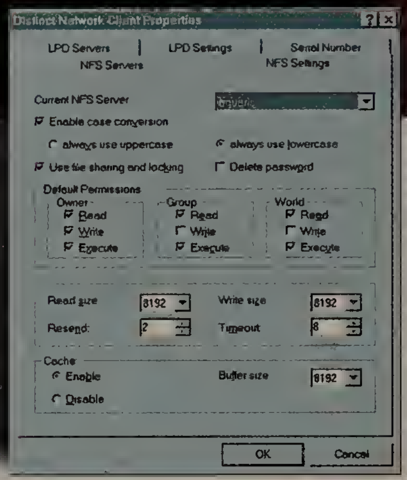

Distinct Network Client Properties

LPD Servers | LPD Settings | Serial Number
NFS Servers | NFS Settings

Current NFS Server

☑ Enable case conversion

○ always use uppercase ● always use lowercase

☑ Use file sharing and locking ☐ Delete password

Default Permissions

Owner: ☑ Read ☑ Write ☑ Execute

Group: ☑ Read ☐ Write ☑ Execute

World: ☑ Read ☐ Write ☑ Execute

Read size: 8192

Write size: 8192

Resend: 2

Timeout: 8

Cache: ● Enable ○ Disable

Buffer size: 8192

OK Cancel

Highlights:

- Integrates seamlessly into Windows 95
- Mounts NFS drives from Explorer or Network Neighborhood
- Supports file and record locking
- Allows central authentication with a single server running PCNFSD for all NFS connectivity
- Prints to NFS or LPD print servers
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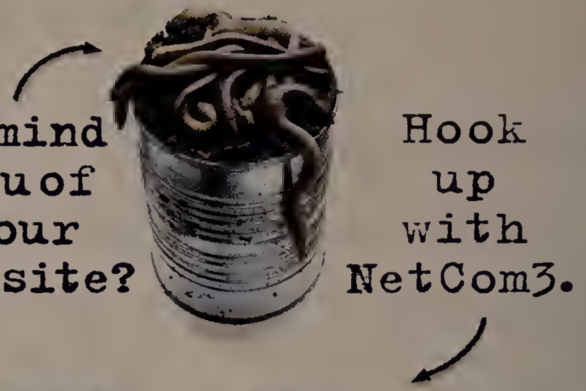

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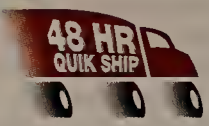

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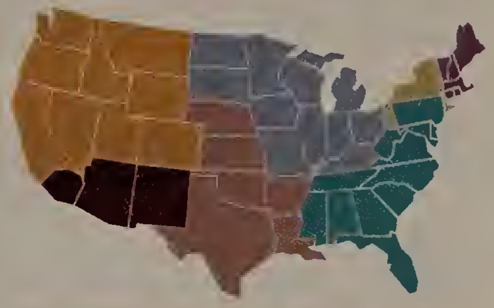

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The Week in Stocks

Gainers

Losers

PERCENT

Gainers		Losers	
Security Dynamics Tech.(L)	35.3	Applix Inc.(L)	-28.8
CrossComm	27.5	IPL Systems Inc.	-24.3
Radius Inc.(L)	25.0	Optical Data Systems Inc.	-21.2
Yahoo! Inc.	23.2	VanStar Corp.(L)	-20.3
Adobe Systems Inc.	19.7	FORE Systems Inc.(L)	-18.7
Standard Microsystems Corp.(L)	19.1	Microcom Inc.	-17.7
Exabyte	17.2	NetFrame(L)	-17.6
Netscape Comm. Corp.	16.7	NetManage Inc.(L)	-17.5

DOLLAR

Gainers		Losers	
Security Dynamics Tech.(L)	7.69	Intel Corp.	-9.13
Adobe Systems Inc.	6.63	IBM	-8.63
Yahoo! Inc.	5.25	Texas Instruments	-7.13
Sprint Corp.	4.63	Advanced Micro Devices(H)	-7.00
Netscape Comm. Corp.	4.50	Micron Technology(H)	-5.63
American Power Conversion	2.63	Computer Task Group	-5.50
Komag Inc.	2.56	Microsoft Corp.	-4.81
Sapient Corp.	1.88	McAfee Associates	-4.69

INDUSTRY ALMANAC

Adobe high on graphics

Shares of Adobe Systems, Inc. (Nasdaq:ADBE) shot up last week after the graphics software company reported jumps in first-quarter sales and net income.

"It was a positive earnings surprise," says John Girton, a stock analyst at Van Kasper & Co. in San Francisco. "Their margins were a lot higher than expected. They're certainly bucking the trend in their industry sector." Girton says his firm has upgraded Adobe from a Hold to a long-term Buy.

The San Jose, Calif.-based company reported a 38% gain in net income to $45 million for the quarter ended Feb. 28.

Adobe's revenue for the quarter was split between sales of products for Windows and Apple Computer, Inc.'s Macintosh. The company launched major product upgrades during the quarter, including new versions of Photoshop and PageMaker.

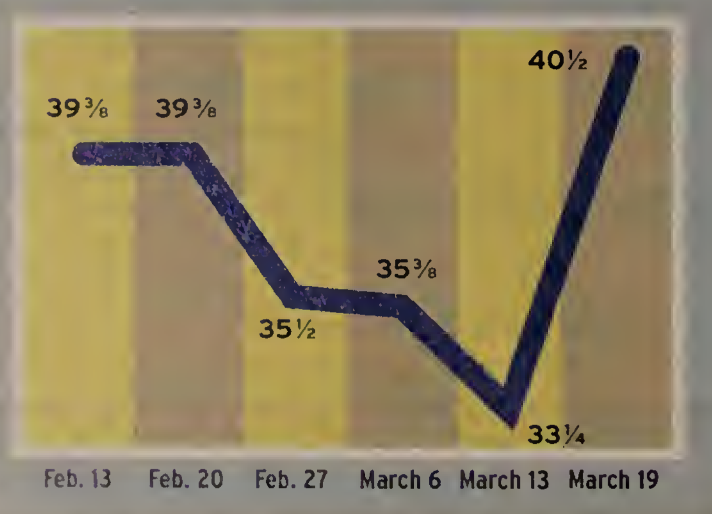
Adobe Chairman and CEO John Warnock said the growth "reflects the broad and growing acceptance of our products . . . in both traditional markets and emerging markets, such as Internet and intranet communications."

Adobe also announced a new-venture stock dividend program to issue dividends based on investments in technology start-ups. The dividends will be in the form of shares of the companies in which Adobe has invested. Girton called the plan unusual. "They're trying to help maximize the shareholders' value," he said. "They have a lot of excess cash."

Adobe has invested $60.1 million in 23 companies, including Netscape Communications Corp. in Mountain View, Calif., PointCast, Inc. in Cupertino, Calif., and Datalogics, Inc. in Chicago. — Kim Girard

BOUNCING BACK

Adobe Systems announced first-quarter financials that caused its stock to rebound



Communications and Network Services OFF 2.67%

Exch	52-Week	Range		March 21 2 PM	Wk Net Change	Wk Pct Change
COMS	81.38	30.63	3 COM Corp. (L)	33.13	-1.63	-4.7
AIT	65.00	49.63	AMERITECH Corp.	61.88	0.00	0.0
ASND	80.25	38.50	Ascend Communications	51.63	-2.00	-3.7
T	44.25	31.63	AT & T	34.38	-1.13	-3.2
BNYN	10.75	2.50	Banyan Systems Inc. (L)	2.88	-0.13	-4.2
BAY	38.13	15.75	Bay Networks Inc. (L)	16.50	-2.25	-12.0
BEL	71.38	43.50	Bell Atlantic Corp.	63.00	-0.88	-1.4
BLS	47.63	35.25	Bellsouth Corp.	44.13	1.38	3.2
BRKT	42.25	14.00	Brooktrout Technology	15.75	-0.19	-1.2
CS	43.63	26.50	Cabletron Systems	29.63	0.13	0.4
CSCC	91.25	23.50	Cascade Communications (L)	25.13	-0.75	-2.9
CGRM	24.13	9.75	Centigram Communications	9.88	-0.38	-3.7
CSCO	75.75	40.50	Cisco Systems Inc.	51.63	1.50	3.0
CLIX	8.25	2.13	Compression Labs Inc.	2.25	-0.06	-2.7
CMNT	10.50	4.75	Computer Network Tech.	5.56	-0.38	-6.3
XCOM	12.75	4.75	CrossComm	8.13	1.75	27.5
DIGI	35.88	12.63	DSC Communications	21.88	0.88	4.2
FORE	44.75	18.50	FORE Systems Inc. (L)	18.50	-4.25	-18.7
GDC	18.88	7.25	General Datacomm Inds.	7.25	-0.75	-9.4
GSX	46.75	35.25	General Signal Networks	40.00	-1.38	-3.3
GTE	49.38	37.75	GTE Corp.	46.63	1.13	2.5
LU	60.63	29.75	Lucent Tech.	52.88	0.38	0.7
MADGF	46.00	8.13	Madge Networks NV	9.38	-0.38	-3.8
MCIC	38.75	22.38	MCI Commmunications Corp. (H)	38.13	1.63	4.5
MNPI	34.50	5.50	Microcom Inc.	9.88	-2.13	-17.7
NETM	18.88	3.22	NetManage Inc. (L)	3.25	-0.69	-17.5
NTRX	10.88	2.63	Netrix Corp. (L)	2.75	-0.38	-12.0
NCDI	16.25	2.88	Network Computing Devices	10.13	-1.00	-9.0
NWK	32.50	11.13	Network Equipment Tech.	14.25	-1.13	-7.3
NETG	30.25	15.25	Network General	21.38	-2.13	-9.0
NN	37.25	20.25	Newbridge Networks Corp.	29.00	-1.25	-4.1
NT	77.00	45.00	Northern Telecom Ltd.	67.13	-1.63	-2.4
NOVL	15.63	8.38	Novell Inc. (L)	10.31	1.25	13.8
NYN	53.38	42.00	Nynex Corp.	47.50	-0.38	-0.8
OCTL	31.75	13.50	Octel Communications Corp.	17.75	-0.63	-3.4
ODSI	27.50	11.25	Optical Data Systems Inc.	13.00	-3.50	-21.2
PAC	41.75	26.00	Pacific Telesis	39.75	0.00	0.0
PCTL	41.25	13.50	Picturetel Corp. (L)	14.50	-0.13	-0.9
PTON	6.50	1.88	Proteon Inc.	1.88	-0.31	-14.3
RACO	7.00	3.50	Racotek Inc.	3.75	-0.25	-6.3
RETX	10.88	3.38	Retix	4.44	-0.38	-7.8
SBC	58.25	46.00	SBC Communications	54.88	-0.25	-0.5
SFA	20.38	12.00	Scientific Atlanta Inc.	17.00	-0.50	-2.9
SHVA	87.25	12.13	Shiva Corp. (L)	12.56	-0.31	-2.4
FON	47.38	34.50	Sprint Corp.	47.38	4.63	10.8
SMSC	18.75	8.25	Standard Microsystems Corp. (L)	10.13	1.63	19.1
USW	37.25	27.25	U S West Inc.	34.00	0.63	1.9
USRX	105.50	45.88	US Robotics	56.25	-2.75	-4.7
XIRC	31.13	10.75	Xircom	15.75	0.31	2.0
XYLN	76.00	17.13	Xylan Corp.	18.75	-0.38	-2.0

PCs and Workstations OFF 4.07%

Exch	52-Week	Range		March 21 2 PM	Wk Net Change	Wk Pct Change
AALR	15.25	6.13	Advanced Logic Research	9.25	-0.75	-7.5
AAPL	28.88	15.13	Apple Computer Inc.	16.50	0.00	0.0
ASTA	8.50	3.94	AST Research Inc.	4.50	-0.19	-4.0
CPQ	87.88	35.88	Compaq Computer Corp.	74.88	-2.88	-3.7
DELL	76.00	15.25	Dell Computer Corp.	67.13	-4.38	-6.1
GATE	66.63	24.88	Gateway 2000 Inc.	51.44	-3.94	-7.1
HWP	60.00	37.75	Hewlett Packard Co.	57.25	1.00	1.8
MUEI	25.00	8.75	Micron International Inc.	20.00	0.25	1.3
NIPNY	65.00	49.88	NEC America	56.00	-0.50	-0.9
SGI	30.13	17.88	Silicon Graphics	20.25	-2.88	-12.4
SUNW	35.13	20.38	Sun Microsystems Inc.	28.13	-1.81	-6.1

Large Systems OFF 5.97%

Exch	52-Week	Range		March 21 2 PM	Wk Net Change	Wk Pct Change
AMH	14.00	8.13	Amdahl Corp.	9.75	-0.31	-3.1
DGN	20.75	9.00	Data General Corp.	18.38	-1.00	-5.2
DEC	68.25	27.00	Digital Equipment Corp. (L)	28.25	-1.50	-5.0
IBM	170.13	89.13	IBM	133.63	-8.63	-6.1
MDCD	20.25	3.88	Meridian Data Inc.	4.13	0.00	0.0
NETF	6.13	1.75	NetFrame (L)	1.75	-0.38	-17.6
SQNT	20.13	10.50	Sequent Computer Sys.	14.88	-1.75	-10.5
SEQS	4.38	1.88	Sequoia Systems Inc.	2.31	-0.13	-5.1
SRA	35.13	16.63	Stratus Computer Inc.	30.00	-2.63	-8.0
TDM	15.25	8.38	Tandem Computers Inc.	12.00	-0.38	-3.0
UIS	9.13	5.38	Unisys Corp.	6.38	-0.13	-1.9

Software OFF 2.03%

Exch	52-Week	Range		March 21 2 PM	Wk Net Change	Wk Pct Change
ADBE	45.13	28.50	Adobe Systems Inc.	40.25	6.63	19.7
AMSWA	7.81	3.63	American Software Inc.	7.38	0.00	0.0
APLX	42.50	7.00	Applix Inc. (L)	7.13	-2.88	-28.8
ARSW	82.75	21.00	Arbor Software	27.50	1.13	4.3
ADSK	44.25	18.50	Autodesk Inc.	31.50	-2.75	-8.0
BGSS	32.50	14.88	BGS Systems Inc.	29.63	-1.38	-4.4
BMCS	51.00	25.00	BMC Software Inc.	45.00	-0.31	-0.7
BOOL	27.50	14.00	Boole and Babbage	23.50	0.50	2.2
BORL	20.25	4.75	Borland Int'l Inc.	7.50	-0.44	-5.5
BOBJY	55.50	8.63	Business Objects	10.13	0.19	1.9
CAYN	10.75	3.81	Cayenne Software Inc.	4.38	0.19	4.5
CNTR	6.75	2.63	Centura Software	3.88	-0.50	-11.4
COGNF	39.50	18.25	Cognos Inc.	24.63	0.94	4.0
CA	67.88	37.25	Computer Associates (L)	40.00	-1.88	-4.5
CVN	13.25	5.13	Computervision Corp.	5.13	-0.63	-10.9
CPWR	69.25	22.75	Compuware Corp.	60.88	-2.00	-3.2
CSRE	32.00	10.75	Comshare Inc.	14.13	-0.63	-4.2
COSFF	13.88	6.13	Corel Corp.	6.63	0.19	2.9
DWTI	8.25	2.63	Dataware Technologies Inc.	4.13	-0.50	-10.8
FILE	62.75	15.50	Filenet Corp. (L)	16.38	-2.50	-13.2
FRTE	81.75	21.00	Forte Software (L)	23.00	-2.75	-10.7
FTPS	14.38	4.88	FTP Software Inc.	6.25	-0.69	-9.9
HUMCF	47.63	23.00	Hummingbird Comm. Ltd.	27.06	-2.69	-9.0
HYSW	26.38	9.75	Hyperion Software Corp	17.63	-2.13	-10.8
IRIC	16.38	11.00	Information Resources	14.13	-0.25	-1.7
IFMX	35.13	15.50	Informix Corp	16.75	-0.44	2.5
INGR	18.13	7.75	Intergraph Corp.	8.00	-0.13	-1.5
LEAF	9.44	1.31	Interleaf Inc	1.69	0.00	0.0
ISLI	16.38	7.50	Intersolv Inc.	8.75	0.31	3.7
INTU	55.75	20.88	Intuit Inc.	24.19	1.56	6.9
TLC	30.31	7.75	Learning Co. (The)	7.75	1.00	-11.4
LGWX	22.25	5.25	Logic Works	6.13	-0.25	-3.9
MAPS	18.00	7.50	MapInfo Corp	9.00	0.00	0.0
MATH	9.25	2.75	MathSoft	4.00	0.06	1.6
MCAF	65.50	23.50	McAfee Associates	42.44	-4.69	-9.9
MENT	18.50	7.38	Mentor Graphics	9.13	-0.06	-0.7
MIFGY	21.25	9.00	Micro Focus	19.75	-0.50	-2.5
MGXI	18.63	4.00	Micrografx Inc	5.00	-0.06	-1.2
MSFT	103.50	49.38	Microsoft Corp.	95.19	-4.81	-4.8
ORCL	51.00	26.50	Oracle Corp	40.00	-0.38	-0.9
PMTC	64.25	33.75	Parametric Technology	49.75	-1.63	-3.2
PARQ	14.63	1.19	ParcPlace Systems Inc. (L)	1.50	0.06	4.3
PSFT	56.75	23.88	Peoplesoft	39.50	-3.75	-8.7
PTEC	20.38	12.50	Phoenix Technologies	15.63	-0.88	-5.3
PSQL	13.75	5.50	Platinum Software	10.38	0.94	9.9
PLAT	18.75	9.25	Platinum Technology	11.63	-1.38	-10.6
PRGS	23.00	12.13	Progress Software Corp	16.50	0.63	3.9
RNBO	24.00	14.63	Rainbow Technologies Inc	16.75	-1.13	-6.3
REDB	61.00	12.56	Red Brick Systems Inc. (L)	16.25	1.25	8.3
SAPE	58.25	29.25	Sapient Corp.	34.13	1.88	5.8
SCOC	9.13	5.50	SCO Inc.	6.50	-0.50	-7.1
SDTI	54.50	21.00	Security Dynamics Tech. (L)	29.44	7.69	35.3
SOTA	19.75	10.38	State of the Art	11.63	0.13	1.1
SSW	81.38	27.25	Sterling Software Inc.	27.88	-0.13	-0.4
SDRC	37.38	15.00	Struct Dynamics Research	21.88	0.63	2.9
SYBS	27.88	13.50	Sybase Inc.	14.00	-0.81	-5.5
SYMC	18.38	8.75	Symantec Corp.	14.00	-0.19	-1.3
SNPS	50.50	26.75	SynOpsys	30.88	1.00	3.3
SSAX	25.50	8.25	System Software Assoc.	9.13	-1.00	-9.9
SYSF	36.50	7.25	Systemsoft Corp.	9.75	-0.25	-2.5
TRUV	9.63	2.25	Truevision Corp. (L)	2.63	0.06	2.4
VIEW	17.50	8.38	ViewLogic Systems	15.63	1.00	6.8
VMRK	12.63	5.50	VMark Software Inc.	7.13	-0.13	1.7
WALK	15.63	9.38	Walker Interactive Systems	12.50	-0.88	-6.5
WALL	27.50	12.25	Wall Data Inc.	15.88	-1.25	-7.3
WANG	26.13	15.38	Wang Laboratories Inc.	19.00	-1.31	-6.5

Internet OFF 2.13%

Exch	52-Week	Range		March 21 2 PM	Wk Net Change	Wk Pct Change
AOL	71.00	22.38	America On-Line	40.00	-3.25	-7.5
BBN	30.75	15.63	BBN Corp	18.25	-0.88	-4.6
CSRV	35.50	8.63	Compuserve Corp.	10.00	-0.38	-3.6
EDFY	55.75	10.13	Edify Corp.	10.63	-0.13	1.2
LCOS	29.25	5.75	Lycos Inc.	14.25	1.38	10.7
NETC	44.50	7.88	Netcom On-Line (L)	8.50	-0.88	-9.3
NSCP	75.25	25.50	Netscape Comm. Corp.	31.50	4.50	16.7
OMKT	42.25	9.00	Open Market Inc. (L)	9.13	-1.13	11.0
PSIX	19.38	6.75	PSINet	7.25	-0.69	-8.7
QDEK	17.63	2.88	Quarterdeck Corp. (L)	3.00	-0.56	-15.8
RAPT	38.50	12.75	Raptor Systems	13.50	-0.88	-6.1
SCUR	38.25	5.63	Secure Computing Corp.	6.00	-0.75	-11.1
SPYG	34.88	7.63	Spyglass Inc. (L)	8.13	-0.13	-1.5
YHOO	43.00	15.50	Yahoo! Inc.	27.88	5.25	23.2

Semiconductors OFF 5.91%

Exch	52-Week	Range		March 21 2 PM	Wk Net Change	Wk Pct Change
AMD	48.50	10.25	Advanced Micro Devices (H)	39.63	-7.00	-15.0
ADI	29.25	12.75	Analog Devices Inc.	21.88	-1.75	-7.4
CHPS	26.50	8.63	Chips and Technologies	11.06	-0.31	-2.7
CRUS	25.25	10.63	Cirrus Logic (L)	11.88	-0.88	-6.9
CY	16.63	9.13	Cypress Semiconductor Corp.	12.63	-0.88	-6.5
CYRX	36.50	11.50	Cyrix	19.31	-3.31	-14.6
INTC	165.00	54.13	Intel Corp.	131.88	-9.13	-6.5
LSCC	54.88	19.75	Lattice Semiconductor	42.25	-1.38	-3.2
LSI	39.63	17.00	LSI Logic Corp	33.75	-3.38	-9.1
MCRL	41.50	12.00	Micrel Semiconductor Inc.	36.50	1.75	5.0
MU	45.25	16.63	Micron Technology (H)	38.75	-5.63	-12.7
MOT	69.75	44.13	Motorola Inc.	56.13	0.38	0.7
NSM	32.25	13.00	National Semiconductor	27.75	-1.88	-6.3
TXN	87.25	40.50	Texas Instruments	77.88	-7.13	-8.4
VLSI	29.25	10.38	VLSI Technology	17.31	-0.44	-2.5
XLNX	48.75	24.50	Xilinx	44.88	-0.38	-0.8
ZLG	40.38	14.88	Zilog Inc.	23.50	-0.88	-3.6

Peripherals and Subsystems OFF 2.28%

Exch	52-Week	Range		March 21 2 PM	Wk Net Change	Wk Pct Change
ADPT	46.88	17.50	Adaptec Inc.	36.00	-0.44	-1.2
APCC	31.50	8.50	American Power Conversion	23.38	2.63	12.7
CBEX	7.63	1.31	Cambex Corp.	1.44	0.00	0.0
CREAF	15.13	3.50	Creative Technology Ltd.	9.75	-0.50	-4.9
RACE	24.50	3.75	Data Race Inc.	15.25	-1.25	-7.6
DTM	12.50	4.25	Dataram Corp	9.44	-0.44	-4.4
EMC	39.88	16.50	EMC Corp.	33.50	-1.38	-3.9
EMLX	21.38	10.13	Emulex Corp.	15.00	-1.00	-6.3
ESCC	29.00	19.50	Evans and Sutherland	26.00	-0.75	-2.8
EXBT	22.75	9.50	Exabyte	12.75	1.88	17.2
IISLF	4.13	1.38	Intelligent Info. Systems	1.75	-0.19	-9.7
IOM	55.13	10.88	Iomega Corp.	14.50	-0.13	-0.9
IPLS	8.25	1.25	IPL Systems Inc.	1.75	-0.56	24.3
KMAG	37.00	17.63	Komag Inc.	29.00	2.56	9.7
MTSI	29.75	12.88	Micro Touch Systems Inc.	22.75	-2.88	-11.2
PEAK	27.50	8.94	Peak Technology Group (L)	8.94	-1.13	-11.2
PNCL	12.00	2.00	Pinnacle Micro Inc.	2.94	-0.38	-11.3
AQM	6.75	3.75	QMS Inc	4.63	-0.38	-7.5
QNTM	46.00	10.88	Quantum Corp.	37.63	-0.25	-0.7
RDUS	4.88	0.25	Radius Inc. (L)	0.31	0.06	25.0
SEG	56.25	18.13	Seagate Technology	43.25	1.00	-2.3
STK	54.38	24.00	Storage Technology	38.38	-2.38	-5.8
STLC	8.75	0.53	Streamlogic Corp.	0.69	0.00	0.0
TEK	52.25	32.00	Tektronix Inc.	50.63	-0.13	-0.2
WDC	77.25	17.88	Western Digital Corp	56.75	-2.75	-4.6
XRX	63.25	41.88	Xerox Corp.	60.00	-1.88	-3.0

Services OFF 4.35%

Exch	52-Week	Range		March 21 2 PM	Wk Net Change	Wk Pct Change
AMSY	37.13	15.75	American Mgmt. Systems	21.31	1.06	5.2
ANLY	30.50	16.50	Analysts Int'l	23.25	-1.75	-7.0
AUD	45.75	35.63	Auto Data Processing	43.75	0.13	0.3
BDMI	30.75	18.13	BDM International Inc.	22.00	-0.75	-3.3
CATP	37.25	15.75	Cambridge Tech. Partners	23.00	-2.25	-8.9
CEN	54.88	32.25	Ceridian Corp	36.25	3.88	-9.7
CDO	33.00	20.25	Comdisco Inc.	31.75	0.13	0.4
CPU	30.88	11.50	CompUSA Inc.	17.00	-2.50	-12.8
CHRZ	54.00	15.00	Computer Horizons	28.25	4.25	-13.1
CSC	86.50	61.63	Computer Sciences (L)	65.25	-2.38	-3.5
TSK	47.50	18.88	Computer Task Group	35.13	-5.50	-13.5
CDAT	28.63	12.75	Control Data Systems Inc	14.63	0.50	3.5
EGGS	13.88	4.38	Egghead Discount Software	4.44	-0.19	-4.1
EDS	63.38	40.75	Electronic Data Systems Corp	41.88	-2.25	-5.1
INAC	40.63	15.38	Inacom Corp	23.13	-1.88	-7.5
INEL	11.50	2.81	Intelligent Electronics	3.50	0.19	5.7
KEA	37.88	14.13	Keane Inc.	30.50	0.13	0.4
MICA	25.00	9.50	Microage Inc.	13.69	-0.19	1.4
PAYX	63.63	37.63	Paychex	43.56	-0.81	1.8
PMS	55.50	33.13	Policy Management Sys.	43.13	0.00	0.0
REY	30.63	19.75	Reynolds and Reynolds	27.38	-0.63	-2.2
SCBI	30.50	14.44	SCB Computer Tech. Inc.	16.88	-0.63	3.6
SEIC	26.38	17.75	SEI Corp	21.38	-0.63	2.8
SMED	72.13	42.25	Shared Medical Systems	48.56	4.63	8.7
SSPE	33.50	18.00	Software Spectrum Inc. (L)	19.19	-0.31	-1.6
SNDT	50.75	31.25	SunGard Data Systems	44.75	-1.00	-2.2
VST	29.75	7.88	VanStar Corp (L)	7.88	-2.00	20.3

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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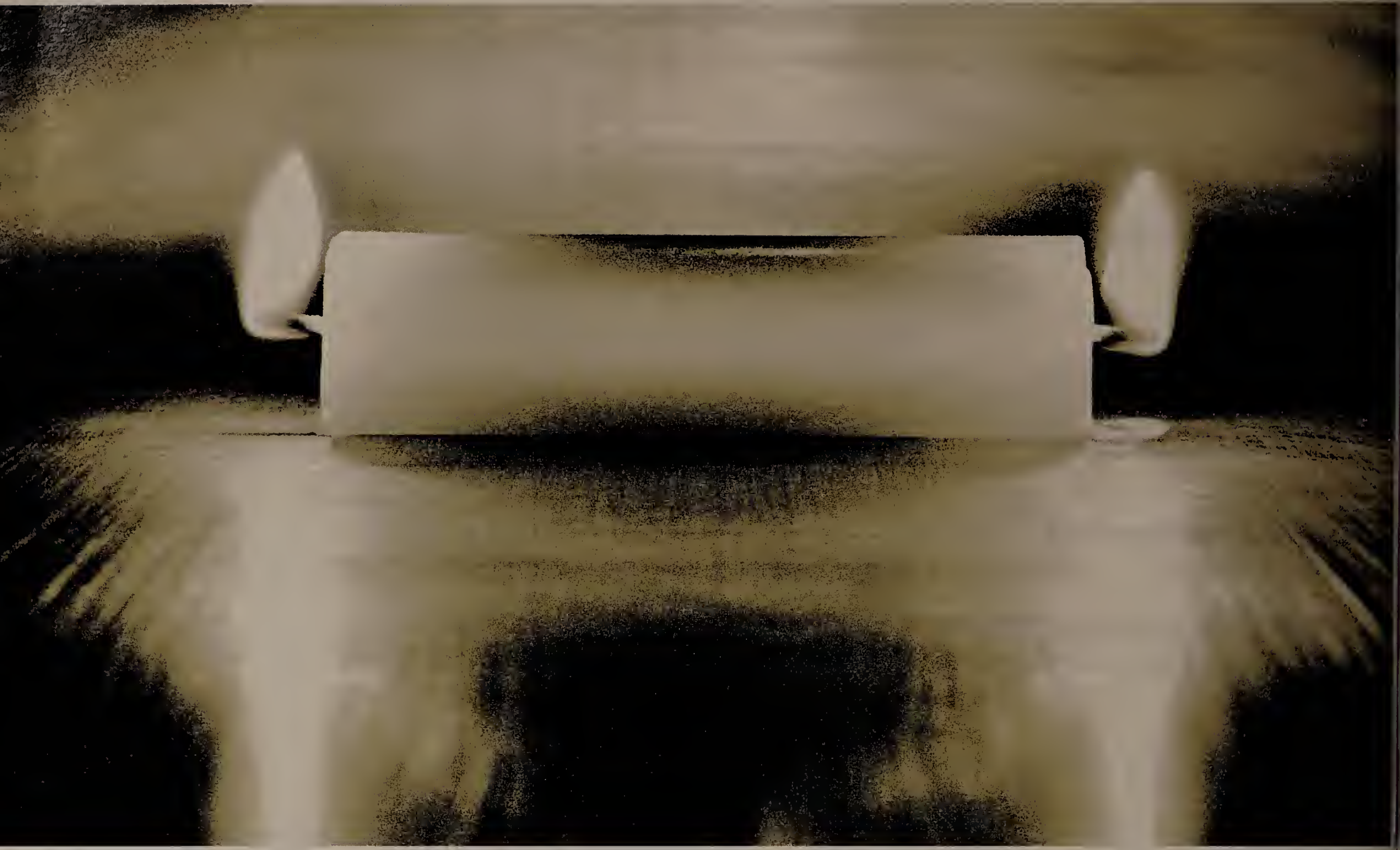

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Is this a great time, or what?

MCI

Informix gives Universal Server a lift

By Craig Stedman

RELATIONAL DATABASES

WITH ORACLE CORP.'S rival Oracle8 database due to ship by midyear, Informix Software, Inc. is racing the calendar to expand its Universal Server's limited platform support.

Since it was released last December, the Informix object/relational hybrid has run on Unix servers from Sun Microsystems, Inc. and Silicon Graphics, Inc., both in Mountain View, Calif. Support is scheduled to be added by June for Windows NT and four more Unix platforms, including those from Hewlett-Packard Co. in Palo Alto, Calif., and IBM.

That will be followed later this year and next year by integration of Universal Server's object features with all of Informix's relational databases, according to officials at Informix in Menlo Park, Calif.

The current limits are keeping prospective users, such as the American Medical Association (AMA), on hold.

The Chicago-based AMA wants to run a World Wide Web-based physicians' directory on Universal Server, but first the database has to support the AMA's Unix boxes from Sequent Computer Systems, Inc.

"We're anxious to get our hands on it," said Jack Look, a data designer at the AMA. Sequent is one of the platforms on Informix's second-quarter list, and the association plans to get the database "as soon as it's available," Look said. "I'm kind of waiting on Informix."

The text portion of the AMA's Physician Select application is stored in an Informix relational database, but the images are in Hypertext Markup Language files, Look said.

Putting everything in Universal Server should make modifications easier and reduce the wait users have to endure when they click on new links, he said.

Universal Server should be available on "all the critical platforms by the time Oracle8 comes to market," said Donald DePalma, an analyst at Forrester Research, Inc.

Then users can focus on the merits of Informix's database-centric approach vs. Oracle's strategy of mixing application and database servers, he said.

Universal Server combines Informix's OnLine relational technology with the object-enabled Illustra database the company bought last year. The combination lets users build applications that mix relational files with multimedia data, such as text, images and audio.

Oracle8 also will support objects and some complex data types when it comes out in June on Windows NT and a mix of Unix platforms. Oracle, in Redwood Shores, Calif., is building transaction processing and data warehousing features into Oracle8 as well. □

Java, CORBA

CONTINUED FROM PAGE 1

simplifies this problem."

Bowser, who has been using a Java/CORBA combination to access a Cummins database strewn across multiple servers, will present his work at the JavaOne conference.

CORBA is software plumbing that allows components, applications and databases to communicate easily among one another. Cross-platform JavaBeans was designed to speed across Internet and intranet lines.

The merger of JavaBeans and CORBA is seen as the other shoe dropping in a strategy designed to challenge Microsoft Corp. and its one-two punch of ActiveX and Distributed Component Object Model (DCOM).

Sun, IBM, Netscape Communications Corp. and Oracle Corp. two weeks ago promised to adhere strictly to CORBA standards to make everything from servers to software work together seamlessly. Now Java applets will be able to communicate directly through that same CORBA pipeline.

JavaSoft officials wouldn't confirm the announcement, but they said the firm would use a CORBA object request broker developed in-house to carry information back and forth between the client and the server in a heterogeneous environment. JavaSoft won't use Joe, an object request broker developed last year by its parent company, Sun.

A spokesperson also said that in a purely Java environment, the linking won't be done with an object request broker but with the firm's Java Remote Method Invocation, which lets one part of a computer request information from another part.

"They can say it's only for heterogeneous environments, but point me to a company that has all Java," said Karen Boucher, director of The Standish Group International, Inc. in Dennis, Mass. "They've created their own CORBA [object request broker]. They're incorporating it into their environment. If that's not support and integration, I don't know what is."

DCOM will work with this new Java system, but Boucher said there is a big difference between supporting a system and being embedded in it.

Paul Mahowald, vice president of retail systems at Fort Lauderdale, Fla.-based Blockbuster Entertainment Group, said the enhancements to CORBA and Java's interoperability definitely will influence his choice of architectures. He uses Microsoft's Windows-specific DCOM architecture but is evaluating JavaBeans and CORBA.

"If it truly enhances interoperability like they're talking about, it would open up my options for other operating systems," Mahowald said. "Instead of using NT on the server because I have to with DCOM, I could buy a Sun server. I could buy from IBM."

SOMETHING TO CONSIDER

Also evaluating architectures is Frank Manci, a network technical manager at Colonial Savings F.A. in Fort Worth, Texas. He, too, said JavaSoft's upcoming announcement will influence his decision to go with CORBA and JavaBeans.

Manci is working to get a World Wide Web site up and running by this summer, partly so the bank can give customers access to in-house information. "It's soon going to be a competitive disadvantage to not be able to do that in many industries," Manci said.

Novell CEO Schmidt

CONTINUED FROM PAGE 1

Schmidt said. "And my parents were very relieved."

As a graduate student at the University of California, Berkeley, Schmidt teamed with close friend and future Sun Microsystems, Inc. executive Bill Joy to build one of the school's first computer networks.

"It worked — sort of," Schmidt recalled. "I built the network with the presumption that every machine would correspond to one letter in the alphabet. Trouble was, that meant only 26 computers. It took Berkeley years to undo that limitation."

Schmidt also worked as an intern at Zilog, Inc. in Campbell, Calif. — famous for its Z80 logic chip — and at the Xerox Palo Alto Research Center before he joined Mountain View, Calif.-based Sun. He rose to chief technology officer at Sun. Along the way, he found time to marry and raise two daughters.

MAN WITH A PLAN

Last week, Schmidt, 41, was named chairman and CEO of Novell, Inc., the troubled network operating system vendor in Orem, Utah. And although the salary, perks, challenges and headaches are considerable, some things don't change.

Schmidt said one of the first things he will do when he takes the helm at Novell will be to build his own customized desktop computer from handpicked components.

After that, he will get down to the serious business of boosting Novell's fortunes, which rest on its NetWare/IntranetWare and Novell Directory Services (NDS) products.

High on Schmidt's agenda is accelerating Novell's Java initiatives. To a degree, that already is under way. Novell last week announced it will form a new company, called Novonyx, with Mountain View-based Netscape Communications Corp. to promote Netscape's SuiteSpot on Novell's IntranetWare (see related story, page 3).

Analysts said they are high on Schmidt because he can articulate and deliver the long-term vision Novell has sorely lacked.

"Schmidt's appointment is a real coup for Novell," said Mary McCaffrey, an analyst at Alex. Brown & Sons, Inc. in New York. The brokerage last week raised its rating on Novell to a Buy. "The industry looks at him positively. He has a deep understanding of software and networks. Not only is he a well-respected leader, but he's also well regarded by potential partners," McCaffrey said.

Other pluses are Schmidt's familiarity with Novell and the fact that he says he is "great friends" with Joe Marengi, Novell's president. In fact, Schmidt represented Sun last year during negotiations with Novell for Sun to adopt NDS.

The fruits of those negotiations — Java Directory interfaces — will be unveiled at the JavaOne conference to be held next week.

> "Perception can be harder to fix than a broken product. But if anyone can turn things around, it's Schmidt."
>
> – Bob Sakakeeny,
> Aberdeen Group

"There's no guarantee he can save the day," said Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston.

"Much of what's wrong with Novell is perception that they can't make it as an Internet player and that NetWare is doomed to be trampled by Windows NT. Perception can be harder to fix than a broken product. But if anyone can turn things around, it's Schmidt," he said.

As for specific moves he plans to make, Schmidt wouldn't tip his hand.

"I prefer to surprise people," he said. "Software is a combat sport: You have to build great products, get them to market, articulate the value-add and do an end run around your competitors."

"Failure isn't an option. But if it happens, I can always go back to programming," he added. □

& HP bundles Novell Directory Services with HP 9000s. Page 51

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COMMENTARY

More Java: The standard of the week . . .

David Coursey

In its latest attempt to fight off Microsoft, Sun is trying to drive Java through the International Standards Organization. This is yet another example of how Unix companies try to use standards to accomplish what they can't do in the marketplace.

But the world still turns, and the distraction created by the new standard does more to slow innovation than protect customers. Which could be exactly what Sun wants.

Sun last week requested that Java and related technologies become recognized as Publicly Available Specifications. The request was a first for an individual company.

The Unix world has been playing these games for years. Unix International, the Open Software Foundation and X/Open have all marched in the parade. At the end of that parade, Unix was just as fragmented as it was in the beginning. And customers were still treated to as many types of Unix as Baskin-Robbins has flavors of ice cream.

The DOS world, of course, never had much need for international standards. Microsoft has always created all the de facto standards we needed. Sure, Microsoft sometimes hooked up with other companies. But just as surely, Microsoft always managed to take whatever such cooperation had to offer and then turn it greatly to its own advantage.

Given this history, what can Sun be thinking? That Microsoft will sit on its hands while the standards are made? Does Sun hope that by some miracle, Microsoft will decide to follow the new standard and slow its rate of innovation while Sun catches up?

Or is it more likely that Microsoft will go full speed ahead, pay lip service to whatever standard is proclaimed, "extend" Java in all sorts of directions and create a fractured marketplace? It would be hard to blame Microsoft in this instance, given that it's simply moving Java forward, while JavaSoft seems to be missing in action.

Here's another take: Although client-side Java likely will be more or less portable (even if not totally interoperable between Microsoft and the rest of the world), the server companies have all sorts of reasons to protect themselves by locking customers in to their Java on their server. This server-specificity, if it occurs, could become Java's dirty little secret.

Don't get me wrong. I'm all for standards, along with Mom, apple pie and U.S.-built automobiles.

The Internet is built on international standards. Indeed, the Internet represents the triumph of open standards over Microsoft. There are videotapes of Bill Gates waffling through his "We're not late" speeches to prove it.

But there's a difference between the triumph of good over evil, in the form of open standards over proprietary ones, and what Sun is attempting. As laudable as creating a standard Java may be — and in my heart I hope Sun succeeds — it will take place while Microsoft continues to wrest control of Java from its creators.

It isn't at all clear that this is a battle Sun can win. Perhaps we'd be better off if Microsoft submitted its Java as a standard. But I'll continue to breathe normally while I wait for that to happen.

In the meantime, Sun must realize that no number of standards designations will protect it. The market simply doesn't care. Sun has to build a better Java than Microsoft. ☐

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. . . and the weak floating-point standard

Charles Babcock

Does Java penalize PC architectures? It's hard to resolve this issue by the numbers.

Consultant Jerome Coonen and Sun chief scientist Bill Joy are engaged in a running debate about the way Java handles floating-point calculations. Coonen, an expert on floating-point numbers, says Java penalizes the speed and accuracy of applications that run on Pentium and PowerPC desktops. Joy disagrees.

It's hard to declare victory between the two, but so far, I believe Coonen is ahead on points.

As reported in this space two weeks ago, Coonen asserted in his paper "A Note on Java Numerics," which Intel and Microsoft found room to post on their World Wide Web sites, that Java adds CPU steps and throws off the precision of an Intel Pentium floating-point calculation. It likewise slows and interferes with an Apple PowerPC calculation, although it works just fine on Sun's SPARC and Silicon Graphics' MIPS-based servers.

The fact that Java runs well on SPARC is no surprise, because it originated in a Sun environment. But Sun has been declaring Java to be portable and platform-neutral. I believe Java is portable, but I'm curious about whether it's as neutral as the Swiss.

Joy has responded that "Java numeric applications deliver the same results on all systems; numeric applications written for high-performance computers and personal computers get the same answers. The truth is that Java is specified to compute the same results on all platforms."

OK, but that doesn't answer a related question. I asked Coonen if he was asserting that a Pentium machine would get a more accurate result if left to its own processes while running a language other than Java.

"Yes," he responded. He then supplied a mathematically precise example, which I will spare you. But examples such as that can be found in Coonen's white paper.

Joy argues that Java was defined as a language using 32- and 64-bit internal operations for floating-point arithmetic. Pentiums use 80-bit operations in their arithmetic unit.

So, Joy says, "the results must be converted to 64-bit after each operation — not to give less accurate results, but so that all machines will get the same result."

He notes that most large, high-performance servers "do not use 80-bit arithmetic internally." Joy is giving expression to a schism between the Unix server and the Wintel desktop.

Coonen has suggested to Sun that it revise Java to make its floating-point operations more consistent with IEEE recommendations. Joy responded that the designers of the IEEE standard didn't intend the 80-bit format to become "a data type in a programming language such as Fortran or Java."

Joy says Sun explained the company's implementation to Intel and urged it to "include hardware support for doing this operation more quickly in future Intel processors."

I don't know about that.

I believe the accuracy of a floating-point operation in a Java application running on PC hardware, by some narrow margin, is being sacrificed to uniformity. That's being done because in the Sun lexicon, uniformity equals portability.

I understand that in a networked universe, portability has taken on a new importance. But it still seems to me that getting the most precise results is more important than getting the same results. ☐

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The Back Page

alt.cw

Dispatches & images from the fringes of the electronic frontier

AP/WIDE WORLD PHOTOS

LOW-TECH CABLE INSTALLERS

Sometimes the info-highway has to be paved through some extremely rugged terrain that modern vehicles can't handle. So contractors hired four mules – Festus, Jake, Red and I.B. – to pull 40 miles of fiber-optic cable through the Ozarks in Missouri, The Associated Press reported. "A lot of people forgot the fastest way to get through the country is on a mule or a horse," said mule skinner James King. Festus, at 1,250 pounds the largest of the crew, even hauled cable through snowbanks in Springfield, Mo. He can tow up to 14,000 feet of cable, a load weighing more than a ton.

Legal footnotes

The NBA can't stop Motorola's SportsTrax service from transmitting real-time game data to subscriber's pagers, a federal appeals court ruled. It said "there is no evidence anyone regards SportsTrax . . . as a substitute for attending NBA games or watching them on television."

According to *American Lawyer*, lawyers who find nuggets on the World Wide Web should cite them in the following format: Scott Adams, *The Dilbert Zone* (visited Jan. 20, 1996) <http://www.unitedmedia.com/comics/dilbert>.

Redneck computer lingo

- Modem: How you got rid of your dandelions.
- Hard drive: Trying to climb a steep, muddy hill with three flat tires.
- Keyboard: Place to hang your truck keys.
- Window: Place in the truck to hang your guns.
- LAN: To borrow. "Hey Delbert! LAN me yore truck."
- Packet: What you do to a suitcase or Wal-Mart bag.

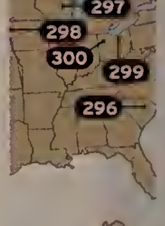
Based on the concept that no two faces are exactly alike, this biometric access-control scanner creates a digital "facial signature" to match against a stored one. The vendor, Identification Technologies International in Columbia, Md., claims it can distinguish between identical twins and isn't fooled by a new beard or eyewear.

TELECOMMUTING HEAVEN

Rankings of U.S. locations with the best combination of Internet access, ISDN connections, business services and "quality of life" factors.

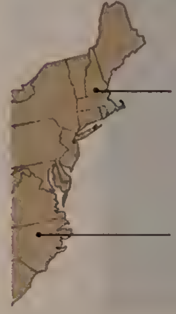
Top 5 cities

1. San Francisco
2. San Jose, Calif.
3. Los Angeles
4. San Diego
5. Seattle



Bottom 5 cities

300. Lima, Ohio
299. Mansfield, Ohio
298. Sioux City, Iowa
297. Wausau, Wis.
296. Sumter, S.C.



Best small town

Manchester, N.H.

Best midsize location

Raleigh/Durham area in N.C.

Source: PC World, San Francisco; Money, New York. Full results at www.pcworld.com

Send your alt.cw contributions to mbetts@cw.com. If your item is used, you'll receive a cool T-shirt.

Inside Lines

What, us worry?

No, Digital and Sun are *not* worried about last week's Microsoft/Hewlett-Packard alliance. How do we know? Senior executives from both companies called last week to tell us they see the alliance as a great opportunity to increase their market share. Digital assured us that Microsoft in fact is a much closer buddy to the company than HP could ever hope to be. And Sun pointed us to a position paper on its Web site that explains why the company doesn't think the announcement is such a big deal. We believe them, of course. Except we hadn't asked if they were worried!

Fujitsu preps ruggedized 'lite' handhelds

Fujitsu ICL-Systems in La Jolla, Calif., plans to join the ruggedized handheld world in the next couple of weeks. While most ruggedized devices are heftier than standard handhelds, these pen-based devices will be the lightest handhelds on the market, weighing only 1.13 pounds. They'll come with a 7.2-in. color screen and a small keyboard and cost approximately $4,200.

Alliance aims for 'ruggedized' E-mail

If E-mail networks are to be the basis of intranet applications, they have to be more reliable than they are today. That's the driving force behind a multivendor initiative to be announced at the Electronic Messaging Association conference next month in Philadelphia. IBM and Intel are heading up the Business Quality Messaging group, which was formed to deliver some of the capabilities of high-end transactional messaging products (such as IBM's MQSeries) to users of shrink-wrapped E-mail and groupware, sources said.

Foolproof network security

Heads were nodding in agreement last week as Gary Lynch, IT security executive at Prudential Insurance and a former Gartner Group analyst, told the Information Systems Security Association's annual conference that a single "enterprisewide security solution" is still 18 to 24 months away. One vendor recently told Lynch it was offering one-stop shopping for network security. "What does that mean?" Lynch quipped. "It disables my network?"

Digital jumps on NC bandwagon

Digital Equipment and Oracle's Network Computer subsidiary are apparently set to announce today a common reference platform for a network computer. The reference platform will be made available to other vendors, too.

StorageTek to add new disk system

By next year, Storage Technology officials say the company will develop its own Unix-based storage system to go with its Iceberg mainframe disk products, now resold by IBM under the Ramac name. The open systems storage market of Unix and Windows NT-based disk systems is expected to grow faster than the mainframe storage market this year.

CD-ROM has big appetite

The latest CD-ROM from Sierra On-Line in Bellevue, Wash., "The Jenny Craig CookBook, Cutting through the FAT," isn't for users with thin clients. It calls for at least 16M bytes of RAM, 15M bytes of free hard disk space and a four-speed CD-ROM drive.

It's a good thing book publisher Academic Press doesn't publish fiction. The cover of The C++ Training Guide *by Steve Heller lists supposed "Reader Comments" such as, "I couldn't put it down," ". . . gripping . . . ," ". . . a technical novel." Well, this newly published page-turner includes such deathless prose as, "To allocate memory dynamically, we use the new operator, specifying the data type of the memory to be allocated and the number of elements that we need" (Page 327). We could go on, but we're afraid we'd lose our grip and slide off our chair, asleep. If you have any gripping news leads, contact news editor Patricia Keefe at patricia_keefe@cw.com or (508) 820-8183.*

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